



FRIDAY, OCTOBER 29.

Contributions.**Fast Locomotive-Cylinder Capacity.**

TO THE EDITOR OF THE RAILROAD GAZETTE:

I call your attention to an error in the *Gazette* of Oct. 1, article on "Fast Locomotives." The contents should be in cubic inches instead of square inches. The figures for 18×18 in. cylinder are not correct; an 18×18 in. cylinder has only 4,581 cubic inches instead of 5,581. It would require an 18 in. cylinder 21.4 in. long to equal the contents of one 17×24 in., and a 19×19 in. would not equal 17×24 .

How does short stroke affect the distribution of steam in the cylinders?

WM. FORSYTH.

FORT WAYNE, Oct. 19, 1880.

French Freight Tariffs and Government Control.

For some time there has been going on in France a sharp discussion on the question of state railroad ownership. The government, in assisting certain lines in the West that could not support themselves, felt constrained to take possession of them, and it being found impossible to use them advantageously by themselves, it purchased certain connecting and adjacent lines of one of the six great companies, and thus formed a seventh or state system. But the movement has not stopped here; there is a considerable party in favor of increasing the state's system by taking some or all of the lines of the six great companies, and this question is a prominent subject of discussion in Parliament, by the press and by pamphleteers. One of the complaints made against the existing system is that the government has no effective control of the rates charged on the railroads. In a pamphlet by M. Emile Level, an engineer and partisan of the six great companies, this argument is met by an account of the course which the companies have to follow in making or changing rates, which account, together with the following discussion of the different classes of freight rates, will doubtless be found interesting in this country, and we therefore translate it below:

(Translation.)

Is there no effective control over rates, and does the state exercise no authority over the companies? Are the schedules of rates made and proposed by the companies approved without preliminary investigation?

The truth of the matter is this: All the propositions of the companies, without exception, are submitted to the Minister of Public Works. The Minister sends them to the prefects (the executive chiefs of departments) who refer them to the chambers of commerce, to the chief engineers of administrative inspections, and to the commercial inspectors. Then, when the opinions of these authorities are reported to the ministry, they are sent to the Consulting Railroad Commission, a sort of supreme tribunal or court of last resort. On the opinion of this Commission, finally, the endorsement of the schedules is granted with or without reservation, or it is refused entirely. When it is granted, it is always provisionally.

Placards posted in all the places interested bring to the knowledge of the public the schedules of rates that have been submitted for approval, and at every step in the preliminary investigation any one may make objection or offer his observations.

There is, then, no lack of guarantees. On the contrary they are so complete and so multiplied that interested parties await with impatience the appearance of the rates proposed and always complain of the slowness of the investigation to which they are subjected.

As to the propositions themselves, they contain reductions of rates only, or simple adjustments of rates. An advance in rates would stand no chance of being approved. This fixedness in the maximum of the rates of transportation, this certainty that they will never be raised, affords a valuable security in the case of long-time commercial transactions; but they have the inconvenience of rendering the companies prudent and even fearful, and of checking their initiative, for they know that in case of mistake they cannot recall an experiment which turns out badly or is injurious to their interests.

This being understood, what principles do the companies observe in designing and putting into operation their reduced rates?

In making these rates the companies know that they will never please every one, but they are penetrated with this consideration, that the proposed rates should be injurious to no one. That is the rule; it governs the whole question.

Let us inquire, then, who could be injured by the tariffs planned by the companies to meet the necessities of the domestic and foreign commerce of France.

The differential rates, or rates according to distance, are established, with a maximum limit, on bases which decrease with the distance. Thus, for example, the charge may be 10 centimes (2 cents) per ton per kilometre up to a distance of 100 kilometres, and from 100 to 200 kilometres 8 centimes, 6 centimes from 200 to 300 kilometres, and so on to the maximum determined upon. The companies have been reproached for giving an advantage to certain industries by such reductions to the detriment of others. Doubtless a factory well situated for receiving raw materials and fuel may meet the competition of a rival establishment which, less favorably

situated, profits by a differential rate. But things would be exactly the same if, instead of the railroad, this establishment was served by a canal. It is the eternal question of geographical situations disturbed by public works, which cause natural obstacles and the inequalities of centres of production to disappear. The general interest is above these considerations, and it would not be possible to avoid the inconveniences charged against differential rates, admitting that they really exist, without adopting a uniform rate per kilometre, without any diminution.

Is that what is wanted? A uniform rate per mile would not satisfy commerce, which, on the contrary, demands the extension of the differential rates. Tariffs of this kind, moreover, were neither invented nor imported by the French companies. In all times they have been employed by wagoners and boatmen, and to a much greater extent. On the Saône, for example, the boats charged no more from Châlons to Lyons than from Châlons to Mâcon,* on the Rhône the freight rate was the same to Arles, to Tarascon and to Marseilles. At this day the boats, whenever they continue in the business of transportation over long routes, apply differential rates with maximum limits.

We must carefully preserve these long-distance rates, which permit grain landed at Marseilles and Havre to penetrate to the very centre of France; the cloths and yarns of the North to compete in the South with similar foreign goods imported at the first of these two ports—rates, in a word, which are one of the elements of cheap living.

Special rates are generally differential rates, but at fixed amounts from station to station. They are made for coarse freights which could not bear the rates of the general tariff, and their utility is appreciated by the great manufacturers and the leading commercial interests.

The complaint is only that they are conditional, that is to say, that their application depends on a certain amount of freight. This condition is reasonable, however. If the companies make large concessions in the rates it is not natural that they should at least require that the shipments be made in full car-loads? Do not all carriers by land and by water give reductions to the shippers who give them full loads, save them the trouble of making them up slowly and in detail and enable them to conduct their business economically? In all commerce is there not a difference between wholesale and retail methods?

It has also been asked that the special rates, at fixed charges, should be applied to all stations. Such an application would involve needless complication. These rates were introduced to conciliate interests which are important, it is true, but which exist only between certain well-known points. If it were necessary to make special fixed rates covering all the stations, there would be an indefinite multiplication of rates which would answer no real want, and thus, without profit to any one, a movement in the reverse of the simplification of rates would be made.

To understand properly the range and the nature of the objection made to special rates, because they do not apply to all stations without distinction, we must know what is called the clause of "stations not designated." When a special tariff is made between any two stations, all the stations situated between these two points have the benefit of this tariff if the application of the general tariff gives a higher rate. Thus baled cotton shipped from Havre to Troyes, for example, is charged according to a special tariff. Rouen, situated between these two cities, has the right to claim the application of this special rate, which is lower than the general tariff charged between Rouen and Troyes. Suppose a request to be preferred to make a tariff for baled cotton shipped from Rouen to Troyes. What good would this tariff do, seeing that there is no market for baled cotton at Rouen? The markets are Liverpool, London and Havre. If one was established at Rouen the companies would not hesitate to make a special rate on shipments from that city; why introduce now a tariff which would never be used?

Common tariffs are rates of different companies joined together and charged as if made by a single company. They are not criticised; on the contrary, complaint is made of their insufficiency, and it is desired that the principle should be applied to all special rates. Now the companies establish common tariffs when their utility has been demonstrated. But the elements of the traffic vary on every railroad system, and to require all the other companies to apply a common tariff whenever one company has recognized the necessity of making a special tariff would be requiring labor without reason and organizing complication.

The *transit* rates are certainly those whose application has been most earnestly criticised. Transit is the transportation of foreign goods which enter France, cross the country without stopping in it, and arrive at the frontier at another point, thus passing two lines of custom-houses.

With much reason the companies have been asked to favor the transit of foreign merchandise by way of France. It is the sole means of giving life and movement to certain commercial ports. There is a marked and very happy tendency of the public authorities to improve the condition of our ports, to enlarge them and perfect their accommodations. Unfortunately this tendency is opposed by the fiscal measures adopted by the chambers of commerce; in order to make the interest on the sums advanced by the state to advance the works, they establish tonnage and dock charges whose most immediate result is to keep away vessels just at the moment that the greatest efforts are displayed to attract them. At Antwerp more skilful methods are employed to favor maritime commerce; the tonnage and dockage charges are reduced, and are even abolished for vessels that enter a certain number of times in a year. In France we

see a contrary practice in our new ports; the doors are shut and double-locked that should be thrown wide open.

But in spite of these unfavorable conditions the companies have established transit rates to secure the passage by way of France of goods coming from and going to foreign countries; but they are reproached for making these tariffs with rates lower than those of the domestic or interior tariffs, and thus organizing in foreign markets competition against French products designed for exportation.

This is a manifest misconception of the situation. An example will set it in relief.

Suppose textile fabrics shipped from Manchester to Alexandria by sea, or to Basel by way of Antwerp and the Belgian and Alsace-Lorraine railroads, or to Florence by way of Rotterdam, the German railroads and the Tyrol. By these different routes the charge for transportation is 100 francs per ton, or at least we will suppose so.

If the French companies wish to attract the Manchester goods to our ports and their roads, they are obliged to make a tariff not exceeding 100 francs; otherwise the transit rate would be useless, for not a pound of goods would use it.

The Lyons, the Rouen factories complain and say: "Our domestic tariff to Marseilles, for example, is higher than the whole transit charge; you are competing against us." Where is injury done to the industry of these two cities, since before the establishment of the transit tariff the same English goods caused the same competition while passing at the same rates over foreign routes, and since there would be no change in their reciprocal relations if this tariff was abolished?

In reality, the transit tariffs exercise no influence on the national industry. The struggle is not between the manufacturers, but between the French and foreign companies operating the different routes which compete for the transportation. Suppress these tariffs and the traffic will take the German route, the companies will see their receipts diminish and French commerce will gain nothing by it. On the contrary, the profits of this transit traffic, by reducing the general expenses per unit of traffic, favor and prepare for the reduction of the interior rates, and their development should be insisted upon.

If the state were owner of the railroads, it would take no other course. In attracting the transit traffic to its lines, it would have in view the support of the seaports and the increase of the railroad earnings. Every one would congratulate it on the efforts it should make in this direction. Why reproach the companies for that which would be an honor to the government?

From this point of view the companies would have every advantage in abandoning to the state the establishment of transit rates. They would thus get rid of a very heavy responsibility, and, by reason of the double interest of the government in developing transit traffic and not running the risk of having to pay the interest of railroad securities, which it has guaranteed, they, consequently, could trust it with the care of fixing the rates of this sort of traffic.

Against *international* rates the charge is made of favoring foreign products, but this time in the French market itself, by constituting veritable premiums on imports. Their effect thus would be to destroy, or, at least, to diminish, the advantages given to home production by the duties on imports.

The complaint is serious, and it is important to get to the heart of the question and clear it of all the obscurities that surround it, in order to see it clearly.

These international rates are nothing but common rates agreed upon between French and foreign companies. They apply to the traffic in both directions on each side of the frontier. The agreements with the foreign roads are based upon reciprocity, and when, to the great profit of our countrymen, the French companies have been able to make our neighbors accept rates on domestic goods which, exported from France, to other countries are imports, it is not possible to refuse to them the same concessions on the articles which the other countries in their turn export to us.

These international rates have been established for many years, after laborious negotiations. They have secured to French commerce the advantages of direct relations with all Europe; they have enabled it, by means of fixed rates of transportation, leaving no chance of uncertainty, to develop its exports and send also to seek at the extremities of Europe raw materials which are not found in France, and agricultural products which may chance to be insufficient. We must avoid striking a blow at this system, solely to protect home industry against some advantages which it may give to importations by which, finally, all French consumers profit. The greatest interests of the country are bound up with the existence of these tariffs which are unthinkingly criticised. Our imports in 1879 amounted to more than 4,000,000,000 francs (\$800,000,000), and of this amount articles used for food make up 1,500,000,000 francs (\$300,000,000). The bad harvest has doubled our purchases abroad; but, thanks to the international rates, the price of bread has not increased sensibly. Can such a result be regretted?

If these tariffs favorable to the consumer were abolished what would become of our export commerce, which enjoys abroad reductions of rates similar to those applied to our own importations? In 1879, France exported products of all our industries to the amount of 1,500,000,000 francs (\$300,000,000). Would there not be actual peril in compromising such exportations? On both sides of the frontier the gates should be open, unless they are closed on both sides. No imports are equivalent to no exports; this is the true state of the case.

To resume, if French industry profits by an exceptional tariff for exports, it is only foreign industry that can com-

* It is about twice as far to Lyons as to Mâcon.—TRANSLATOR.

plain of it. If this rate exists among our neighbors with regard to France, certain industries of ours, without doubt, have the right to be excited about it; but the French railroads have no power over the matter, and the government itself, if it worked the railroads, would not think of changing the situation in this respect.

It would do it so much the less, because it is often the industries most protected by duties that complain most.

For example, such as the steel pen manufacture of Boulogne-sur-Mer, on which the Northern Railroad makes rates of 41.80 francs per ton (about 37 cents per 100 lbs.) to Paris. It protests against the Anglo-French rate, which is 54 francs from London to Paris. The French Northern's part of the international rate being 27 francs, Boulogne demands the application of the same rate, that is, a reduction of 14.80 francs, to shipments from that city. It gives as a reason that the foreign merchandise is treated more favorably than the domestic article on the French part of the line. But is not the home industry of this kind, protected by the difference in the amount of the rates (54 minus 41.80 francs), by a difference of 12.20 francs, to which is added, do you know what? A fabulous duty of 1,000 francs per ton, without counting the *decimes*, or 1,250 francs in all!

Under these circumstances we ask every unprejudiced mind if the international rates can be seriously considered as an unpatriotic conception, and if the companies are not right in protesting energetically against the tendencies imputed to them.

* * * * *

Our conclusion with regard to the complaints of commerce touching these complex questions of rates is then that there is nothing to be done? Far from it. The companies have modified the charges for transportation according to the necessities of every day; it will be the same in the future. They could not hold themselves, as has been said with irony, but without truth, in majestic immovability.

In exposing briefly the objections raised with regard to rates, we have desired especially to protest against the tendency of certain minds to search for a formula capable of solving all the economical problems raised in the name of the multiplex interests which the railroads serve. No formula will ever be able to take account, at once, of the nature of the traffic of each region, of the competition of the navigable waters, of the indications of supply and demand, of the relative value of merchandise, and of the relation between the eventual production of a country and the transportation capacity of the instruments devoted to carrying.

Statement of the Engineer in charge of the Hudson River Tunnel.

We are indebted to *Engineering News* for the following statement made by Mr. Charles R. Brush, of the firm of Spielman & Brush, who had immediate charge of the work on the Hudson River Tunnel up to the time of the accident there. This statement was admitted in evidence before the coroner's jury, but was not published in any paper except the *News*:

The first connection our firm had with the Hudson River Tunnel was on the 29th of October, 1879. At that date the brick shaft at the foot of Fifteenth street, Jersey City, had been sunk nearly to its present depth, but there was no bottom to it, and the silt, sand and water were flowing in underneath the walls to a considerable extent.

On Nov. 1, at the request of the President of the company, Mr. Haskin, we took charge of the work.

The present concrete bottom in the shaft was laid under our direction, and when this was accomplished we had timber bracing placed on the interior of the shaft. We also planned and superintended the construction of the present air-lock, the position of which in the shaft, however, had already been determined.

While this work was in progress the President requested our opinion as to the effect of compressed air on silt in the proposed tunnel. We told him we had no experience, either in tunneling or the use of compressed air, and that we knew nothing about the effect the latter would produce on the silt.

He then told us that he had large and successful experience in mining and railroad work in the West, and that he had given the whole subject a great deal of personal study, and was prepared to assume the whole responsibility in the matter; he proposed to obtain men who had practical experience in tunneling and in the use of compressed air, and the work would be prosecuted under his and their direction, at least until the value of the compressed air principle was established, and a certain portion of the tunnel was built.

In the meantime, he wished us to meet him on the work each morning, give him our opinion on such questions as he might submit to us, prepare such drawings as he desired to have made, make all necessary surveys, give lines and grades, examine the work in progress, and report the results of our examination to him.

This work we agreed to perform, and did so up to the time of our resignation. As a matter of convenience in our firm business, I did the work that was required of us on this particular job, supposing that only a temporary arrangement would be necessary while the practical value of the compressed-air principle was being tested.

After this was ascertained, we expected that the work would be thoroughly systematized and permanent arrangements made with ourselves and other engineers. Our arrangement with the President was practically by the hour. We were only expected to do certain things, specially authorized by him, as above stated, and on several occasions I have received intimations that it was unnecessary to give so much of my time to the work.

The plans were generally made in accordance with the work accomplished rather than in anticipation of the work to be done. A general plan was sometimes prepared, but we were especially requested not to make any detailed plans or calculations, unless definitely ordered, as the President considered that these only tended to confuse the workmen.

While we had no control over either the plan or the prosecution of the work, we nevertheless took occasion to make the following criticisms and suggestions:

1. We urged that difficulties should be anticipated and carefully prepared for in advance.
2. We recommended that only one single-track tunnel should be attempted.
3. Before any portion of the tunnel was commenced, we

recommended that poling timbers should be driven into the silt and left imbedded in the masonry of the shaft, so as to protect the sides and top of the excavation while the brick work was in progress.

4. When the temporary entrance was found necessary, we recommended that it should be of a strong and substantial character.

5. After the two tunnels were started, and it was decided to rebuild the temporary entrance, we recommended that, instead of the connection chamber, the two tunnels should be continued back to within six feet of the shaft, and then bulk-headed.

6. When the connection-chamber was decided upon, we recommended that it only be carried to within six feet of the shaft, and then bulk-headed.

7. During the whole progress of the work, but especially while the connection-chamber was building, we were very urgent in advising that the brick-work should be built close up to the iron plates.

These suggestions were all overruled.

The action of the silt through which the work was being prosecuted was slow, and with care there seemed to be but little danger of loss of life. While the character of the work alone was not commendable, the mere fact of its accomplishment demonstrated that, with proper management and suitable precautions, the construction of the tunnel was perfectly feasible.

PRELIMINARY WORK.

On Nov. 3, 1879, the working-shaft at the foot of Fifteenth street, Jersey City, was in position, the bottom of the shoe being 56 ft. below mean high-water, and the eastern inner face of the shaft 88 ft. west of the Hudson River bulk-head line.

The work of laying the concrete bottom was then immediately commenced and finished Nov. 17. Before laying this bottom we called attention to the fact that the thickness proposed (18 in.) would be inadequate to maintain a water-tight floor.

After some discussion, consent was given to lay the floor with an average thickness of 2 ft 9 in., which was done. It has since stood very fairly, although it has always leaked more or less.

Between Nov. 7 and Dec. 28 the time was occupied in bracing up the interior of the shaft, building the air-lock and getting the same in position. The bracing already in the shaft was not in good condition. Many of the timbers were badly sprung and had poor bearings. Most of these were removed, and two hexagonal collar braces, 12 x 12 in. were placed in position, below the present platform under the air-lock, about 7 ft. apart in the clear. These were stiffened by an interior system of star bracing, which also supported the stays against the sides of the wall. Another similar collar brace was afterwards built by Mr. Haskin above the present air-lock.

It was intended, when the work commenced on Dec. 28, to start one large double-track tunnel directly from the shaft. The excavation was, therefore, made around that portion of the wall of the shaft where the tunnel was expected to join it. This wall was in bad condition, especially the false brick work, which had been left in the side of the shaft while the latter was building, and which was to be removed to make way for the tunnel. It had been laid up in common mortar, and, though it was pretty well braced, it was so full of cracks and breaks that I always advised no tunnel work should be done near it, and no air pressure should be brought to bear against it.

Dec. 28, 1879, the first excavation was made under compressed air. The air pressure above was at that time relied upon to uphold the roof, but this proving inadequate, timbering was resorted to. On Jan. 2, 1880, the excavation amounted to 15 ft. around the sides of the shaft, 6 ft. in height and 4 ft. in width. No effort had been made during this time to protect the silt from the effect of the air; the result was that the silt gradually crumbled, and, on the morning of Jan. 3, the whole roof had slowly fallen.

THE TEMPORARY ENTRANCE.

After the failure of Jan. 3, I was asked by Mr. Haskin for advice as to the proper mode of procedure. I told him that I thought by starting off with a small brick tunnel, say 6 ft. in diameter in the clear, and gradually enlarging, he would soon ascertain whether his air pressure would work or not, and to what extent he could carry his heading.

As a protection to the workmen, I also recommended that, as the excavation was made, it should be immediately secured by rings composed of plates of boiler iron. I had plans prepared, and made calculations showing how this funnel-shaped tunnel could be constructed.

This general plan was adopted, but with very material modifications. The chamber was made 30 ft. in length, instead of 56 ft. as I had proposed, and the successive rings were connected only at the top, while I had advised that they should be connected at all points.

The entrance advised by me was a cone, while the one actually built was a series of steps. The understanding was that these steps should be bricked in as the rings were completed.

While the plates for those rings were being prepared, an excavation 20 x 18 ft. in depth was made over the cave, extending from the shaft toward the river. In the bottom of this excavation canvas was spread and held in position by heavy timbers, on the top of which the excavated material was replaced.

Jan. 13, the air pressure was again applied, and on Jan. 16 the first ring of iron plates in the temporary entrance, 6 ft. 4 in. in diameter and 4 ft. in length, were in position. On the next day, the second ring, the same size as the first, was also finished. A series of rings were then built, each 2 ft. 6 in. wide and $\frac{3}{4}$ in. thick, the diameter of the rings increasing about 18 in. successively, until a diameter of 20 ft. was obtained. On Feb. 3 the eleven rings composing the temporary entrance to the tunnel were in position.

These were then lined to a limited extent with concrete instead of brick, as was at first proposed. No lines or grades were allowed to be given until the work was nearly finished, and consequently the alignment was not good.

The bottom plates in rings Nos. 1, 10 and 11 were never placed in position.

This temporary entrance always gave more or less trouble. A number of leaks broke out from time to time, but they were easily controlled by the application of fresh silt.

THE NORTH TUNNEL.

The starting of this work was very difficult, though not as dangerous as that subsequently done in the commencement of the south tunnel. The work was begun by burrowing into the silt and putting up plate, which was supported by bolts on to the plate behind and braces against the undisturbed silt. When the iron ring was thus formed, it was bricked in and the top plates advanced.

Feb. 9 the first plate was in position in this tunnel, and work was continued more or less steadily until June 29, at which time the top plates had been placed in position in the 99th ring, a distance of 281.5 ft. from the east face of the shaft, and the brick lining had been laid to the 95th ring, or 270 ft. from the shaft.

At the 9th ring the old crib bulk-head along the river front was struck and a portion of its bottom had to be removed,

About three feet of the rear of this bulkhead was cut off, and yet but little air escaped, and this portion of the work was successfully accomplished.

During the work a good many leaks occurred, but they were all easily controlled by the application of fresh silt. The worst leak I know of up to the time of the accident occurred on Feb. 27 about noon. At this time the air pressure in the receiver sank from 18 lbs. per square inch down to 12 lbs., and the number of revolutions of the Clayton compressor ran up from 18 to 120 in about 15 minutes.

In about an hour this leak was controlled in the same manner as the rest had been. During the leak the air blew up through the ground in two places, one close to the shaft, and one outside the building, 30 ft. from the shaft. The latter was very bad, the opening in the ground being about 9 in. in diameter, and the water and sand blowing up some five or six feet into the air.

The alignment of this tunnel is not good, and the shape is irregular. The lines and grades were all carefully given, but they were not worked up to. The end of the north tunnel is six feet below grade, and intermediate points are two feet out of line. There were several reasons for this difficulty.

1st. The attempt to form elliptical rings out of plates bent circular in shape.

2d. The self-reliance of the Superintendent in getting at the shape of his work, instead of sufficiently using lines and taking measures in accordance with the data given him.

3d. The use of too light iron plates.

4th. Too great advance of the plates beyond the brick-work.

Toward the latter part of May the plates were advanced at the top as much as 55 ft. beyond the brick-work. The result was that the rings became distorted, and almost imperceptibly the plates began to settle. From this time on the Superintendent was never able to get control of his work. Even if the plates were put upon the true grade they would settle before the ring was completed. An attempt was made to overcome the difficulty by raising the plates above the grade, but the movement of the silt prevented success in getting the rings truly shaped.

The trouble was, no doubt, increased by the fact that on May 23 the work on this tunnel was left to a certain extent unprotected, in order to start the south tunnel. The movement of the silt kept gradually increasing in rapidity from this time, and the successive plates settled until for the last three or four rings the grade was actually 10 ft. in 100 ft.

The four advance rings, 96 to 99, it was found impossible to connect. It was then decided to brick in the rings to 95 and let the silt settle down over these four advance rings without making any attempt to hold them in position.

The settlement was very gradual; the plates were slowly twisted and broken, but it was about two weeks before they had become separated from each other. The tunnel was then filled in to within three feet of the roof, and flooded with water by a hose, in order that the silt replaced might become compacted.

After the rings had been bricked in, levels were carefully taken from time to time on the crown of the arch. These levels showed that no perceptible settlement was taking place in the brick-work. In the early part of June, some slight longitudinal cracks appeared in the roof, which extended along the whole line of the north tunnel, about two feet north of the centre line. In two places, distant respectively 155 and 200 ft. from the shaft, transverse cracks also appeared.

These cracks were generally in the ceiling joints; they seldom extended across the bricks. I carefully examined these cracks at the time they first appeared, and each time after that when I entered the tunnel. I never found any large enough to receive the blade of an ordinary pocket-knife. These cracks were filled in and have given no trouble since that time. The air, however, seemed to escape through the brick-work much more freely at the last than at first. It seemed to go through the pores of the brick. Ordinary red-lead paint was first resorted to, but without much success. A wash of pure cement was then put on in several layers and this was much more effective.

A cave in the silt at the heading of the tunnel was reported in some of the New York papers as having taken place June 4, 1880. I was at the tunnel that day, but had heard nothing of it. The next day I instituted careful inquiries and made a thorough examination of the ground. I found nothing whatever to indicate that any cave had taken place. On the contrary, the silt, when first exposed to air pressure, has always exhibited a wonderfully tenacious character. Within reasonable limits and with proper precautions it was the most easily handled of any material I have ever seen.

THE SOUTH TUNNEL.

May 23, 1880, work was commenced on the south tunnel, and, on July 3, the iron plates were connected in the first seven rings, and all were bricked in except the crown of the first ring. In the eighth and ninth rings only the six top plates had been placed in position.

This tunnel was built without any reference of the matter to Mr. Spielmann or myself. I had arranged so that I could be away for a week in the latter part of May and Mr. Spielmann took my place during my absence. I saw both Mr. Haskin and Mr. Andersen the day I left and on the same day, May 22, examined the tunnel and made sketches showing its condition. No intimation was made to me that the starting of this tunnel was contemplated during my absence, and upon Mr. Spielmann remonstrating, he was informed that it was all right, the Superintendent would attend to the matter. On my return, May 31, I found that the first four rings had been built, but that the brick-work had been finished only in the second and third rings. The method of operations had been similar to that pursued in the commencement of the work at the north tunnel; but it was carried to a much greater extent. A centre core of silt had been left, and the men had burrowed around this until the plates in the rings under construction were completed; the plates as the work advanced being braced against this core of silt. Masons were then sent in and two of the rings were bricked up. The space between the brickwork and the silt was then refilled and the whole allowed time to settle. About June 9 work was again commenced, and the tunnel was advanced to the seventh ring.

Much trouble was experienced in consequence of air escaping from the rear bulk-head of this south tunnel, and in the adjoining portion of the temporary entrance. I recommended that this end of the tunnel be bulk-headed with a heavy brick wall, for the reason that this would be a wise precaution, while the temporary entrance was rebuilding, and also because this bulk-head could be used for bracing the other bulk-heads that would be required in the south tunnel and in the connection chamber. This was considered unnecessary, however, and the wall was not built.

The President desired to proceed with the work on both tunnels while the connection chamber was building. I advised that this should not be attempted, and the idea was abandoned as far as the north tunnel was concerned. As to the south tunnel, the Superintendent did advance the excavation, and put in the six top plates in rings 8 and 9, but as the advance plates of ring 9 struck the old wooden-crib bulk-head, about three feet above the bottom, he refused to go any further until the connection chamber was finished. The bulk-head left at the end of the seventh ring was a wall of

4 x 6 in. timber, laid against the silt horizontally and close together, and resting against the ends of the brick-work, then a series of vertical timbers of the same size, three or four feet apart, and back of these another row of horizontal timbers, of the same size and distance apart as the second row.

These last were braced by a number of struts, resting in openings left in the brick wall.

THE CONNECTION CHAMBER.

June 28 work was commenced on the connection chamber, and July 8 the first four rings were finished. The brick-work in these rings was then immediately commenced, but it was stopped on July 10, at which time only a small portion of the invert had been laid. The roof of the connection chamber was carried forward about 36 ft. in width, until the wall of the shaft was reached, a distance of 23 ft. beyond the ends of the completed rings. The first connection of the roof with the shaft was made July 7, and on July 21 the roof fell.

The plan in building this chamber has been one which I have opposed, as herein above stated. I made models before the work commenced, showing the grounds of my objections. When the work began it was intended to advance by easy stages, bricking up the rings as they were completed, until a point was reached distant 6 ft. from the shaft and then to put in a bulkhead wall. The success attained in building the first four rings induced the Superintendent to believe that it would be better to get in all the iron-work in the chamber before bricking in the finished rings. This idea was modified so far as to build the brick invert of the finished rings about 4 ft. in height, but that was all. The roof-plates were then successfully advanced.

When the point was reached at which the bulk head wall was to be built, it was decided to continue the roof to the shaft.

At the request of the President, I then got out the plates necessary to cover this six-foot space, leaving sufficient margin for the row of plates nearest the shaft to be embedded in a brick wall to a depth of at least 10 in., or as much less as might be found desirable by simply moving the plates next to the shaft one side along the angle-iron of the last ring.

The last time I was in the tunnel was on July 20, between 12½ and 2 p. m. I was making a survey in the north tunnel. I found everything as usual; there was no apparent settlement of the roof, and about 30 linear feet of connection had been made around the wall of the shaft.

A large vacant space had been left in and near the south tunnel, into which the men were throwing the silt that had to be excavated from the chamber.

After I had left, I have been informed, instead of continuing to throw back the waste silt into this space the south tunnel was used simply as a reservoir, and the silt was blown out by air pressure from the tunnel with great rapidity on Tuesday afternoon and evening. This no doubt loosened the roof-plates.

In the meantime the men were engaged adding new plates to the roof near the shaft. These plates had to be fitted in between those already in position. There appears to have been some difficulty about this, and sledging was freely resorted to. This, of course, loosened the roof plates still more and disturbed the silt above. One plate, P.8, which had given special trouble, was partly in position when the shift took place at 4:30 a.m. on July 21. The men left this plate and went to the air-lock. Their foreman, Burns, however, remained behind, notwithstanding the fact that the men kept calling for him. The leak apparently broke out at this plate; it extended back to, and ran all around the shaft. The men in the air-lock then came out and tried to stop the leak. Finding this impossible, six of those who had been in the lock and two of those who had been out to lunch and returned managed to get back into the lock, and these were all who escaped.

The Wabash Settlements.

The New York *World* publishes the following report of an interview with Mr. A. L. Hopkins, first Vice-President of the Wabash, St. Louis & Pacific Railroad:

"Two grave matters have been settled—first, the construction of new roads into competing territory, and secondly, a basis of pooling which affects all the southwestern interests. It was arranged in two days, whereas it has taken several years even to come to a tacit understanding, which was broken at the will of any road that felt aggrieved. You see, Wabash was not a member of the pool, and we declined to make any concessions, because we could not obtain depot facilities in Chicago. Wabash reduced the price of tickets an average of \$1, and the other roads reduced their prices still further. It was on account of this cut that Wabash filled the market with a large quantity of ordinary tickets, which were bought up by speculators to resell. The fare to Kansas City from Chicago was put down to 50 cents by the other roads, and Wabash was obliged to offer the additional inducement of taking passengers to Council Bluffs and Omaha for the same money. The passenger business was pretty nearly ruined in this way, and the competing roads asked Wabash to take up all the tickets it had issued. We refused, since we had a precedent from Chicago & Alton, which about a year ago did the same thing. Thousands of tickets between Kansas City and St. Louis were then sold at ridiculously low rates. These tickets were bought by bankers and brokers, and, as the law has decided that a railroad ticket is good until it is used, they are sold at reduced rates to this day at the brokers' offices. It was easily seen that the Wabash had the upper hand and that the only solution to the differences was to pool the whole business in and out of Chicago."

"What was the agreement that was ultimately reached?" "The other roads conceded to Wabash one-fourth of the passenger business between Kansas City and Chicago and one-third of the earnings from St. Louis to Chicago. The St. Louis business is divided between the Chicago & Alton, the Chicago, Burlington & Quincy and the Wabash, and at Chicago there are four roads to divide the business—the Chicago, Burlington & Quincy, the Wabash, the Chicago & Alton and the Rock Island."

"How was the freight business adjusted?" "The Wabash was admitted into the Southwestern Association from Oct. 1. We agreed to report our business as the other roads do, and proposed to accept any division of business which might be decided at an arbitration meeting to take place before Nov. 15, and I have written to our General Manager, John C. Gault, to confer with the other managers and arrange the details for the appointment of arbitrators. One of the most important subjects that was also settled the same day was the defining of the status of the roads now under construction. The Chicago, Burlington & Quincy agreed not to encroach into the Nebraska (?) Territory, provided that the Missouri, Iowa & Nebraska is not extended further than Shenandoah. The gap through Clarinda to Shenandoah is to be joined by the Chicago, Burlington & Quincy and the Wabash. We shall construct an independent extension of the Quincy, Missouri & Pacific to Stanberry. Another small branch will also be built to Clayton and one from

Champaign to Danville. This will make a perfect system west of Chicago."

"Have you anything in contemplation east of Chicago?"

"We shall turn our attention to that territory in earnest during the next few months. Lake Shore has finally refused to permit Wabash to cross its tracks and, although we had a satisfactory arrangement with the managers of the road, Mr. Vanderbilt has since declined to make any concessions. Our Western system has secured for Wabash an independent line from Omaha and Council Bluffs to Chicago as good as the Rock Island line. The leases and roads which the Wabash controls give it a connection from Kansas to Chicago as short as any other line. The line between St. Louis and Chicago is completed, and it is as short a line as there is. On Jan. 1, 1881, we shall have trains running to Detroit from Butler, Ind. Mr. Vanderbilt, having declined on behalf of the Lake Shore, to accept the Wabash business at Chicago (and we could have turned over a large amount of freight at that distributing point), we have already closed a lease which gives us control of the Chicago & Western Indiana Railroad. This road runs from Chicago to Dolton, and at the latter point it is possible to build an air-line of 150 miles over a flat country at a small cost, which will connect with the Wabash line about to be completed to Detroit at a point to the north of Toledo. In fact, it is contemplated to parallel the Lake Shore in every direction that may be deemed desirable, Mr. Vanderbilt having refused the Wabash business at Chicago on any terms. Wabash will then have a line from Chicago to Detroit, 25 miles shorter than any other route. At Detroit we have a contract with the Great Western of Canada, which is better than a lease or even ownership of the road, by which we will be able to run our cars to Buffalo, where Wabash will have a separate depot and will conduct its business as if it owned an independent road of its own. Our stockholders are very patient, for of course we have had to spend a vast amount of money for all these valuable acquisitions. The road earned \$433,166 for the second week of October. In short, we are earning over \$22,000,000 per annum, which is a wonderful comparison to the Milwaukee & St. Paul road, about which so much talk has been made and which has 1,200 miles more road. Of course our rates of freight are much lower than the rates made by the St. Paul road and we have to carry a larger tonnage to get so much gross money on 2,210 miles of road. Our bonded debt has been so judiciously systematized that in capitalizing the various leases the entire mortgage does not average \$23,000 per mile at a fixed interest cost of 6 per cent. per annum. Now that all our differences are compromised, we shall be able to go ahead and make valuable connections in the east to prepare for the completion next year of the new trunk road—the New York, Lackawanna & Western—with its terminus at Buffalo. The great strength of the present southwestern pool consists in the provision that at the end of every six months each road binds itself to abide by any new percentages of business which may be established by the arbitrators. The Wabash will gain by this arrangement, since it will certainly be able to influence more freight in proportion than any other road, and will consequently be entitled to a larger share of the profit than will possibly be accorded it at first. It is probable that the Hannibal & St. Joseph, which has pooled its issues with the Chicago, Burlington & Quincy, will find that it would have been better to keep on the Wabash side of the controversy, since the Chicago, Burlington & Quincy will not only speak for itself in any future arrangement, but will force the Hannibal & St. Joseph to comply with these terms."

Running Powers Over Foreign Lines in Great Britain.

The London *Railway News* has an article on the extent to which railroads in that country have obtained the right to run their trains over the roads or parts of the roads of other companies, from which we take the following:

The Railway and Canal Traffic Act, 17 and 18 Vic., provides that every railway company working railways which form part of a continuous line of railway, or which have the terminus or station of the one near the terminus or station of the other, shall afford all due and reasonable facilities for receiving and forwarding all the traffic arriving from one of such railways by the other, without any unreasonable delay, and without any preference, prejudice, or otherwise, and so that no obstruction may be offered to the public desirous of using such railways as a continuous line of communication. The requirements of this act have been fully met by a most complete and comprehensive system of through booking and rates, in many cases, without change of carriage for passengers, and without transhipment or break of bulk in the case of merchandise, the different companies forming the route supplying simply motive power to the stock in which the traffic is being conveyed forward. Traffic arrangements are also entered into between companies for their mutual convenience by which the engines and staff of one company pass over, or to and from places upon the line of another company on the payment of a haulage allowance, or otherwise, as agreed upon. These are called working agreements, and are not necessarily confirmed by act of Parliament.

Special statutory sanction alone can obtain for a company what is known as running powers, or the right to work over and use with their engines, carriages, wagons and servants, the lines, stations, watering-places and sidings of another company, and then only upon payment of special tolls, which may, according to circumstances, be higher or lower than the authorized tolls exacted from the public for the local user of the portion of line so worked over. For the most part the companies seeking these powers have been unopposed, as they generally act beneficially, or yield some advantage in working to the company whose line is being used. Great opposition has, however, been offered to several of the most important running powers that have been obtained, and the legislature had to compel the companies, in the public interest, to give up the use of their roads to other companies, generally rivals. Other running powers have been obtained for politic reasons and never exercised; as, for instance, those of the London & Northwestern over about two hundred miles of the Caledonian system, and the Caledonian similarly over one hundred miles of the London & Northwestern. The mileage return in the published accounts of the companies shows in every case the number of miles of foreign lines run over under working agreements or running powers, and it would appear that the total mileage thus in joint use is certainly not less than two thousand miles. While the advantage to the public of this joint user is very great, the saving to railway shareholders in the construction of duplicate lines, which but for these compulsory powers would have had to be built, must be very considerable.

The *Railway News* then gives a list of the different sections of road over which companies not owning them have running powers. These are 94 in number, varying from 1 to 310 miles in length. The London & Northwestern alone has running powers over no less than 25 different sections of other roads, three of which are 180 miles long or more.]

A considerable part of the foregoing powers, it will be no-

ticed, are not exercised—the Caledonian between Carlisle Lancaster and Windermere, etc., the Lancashire & Yorkshire between Skipton and Leeds, the London & Northwestern over the Caledonian, Cambrian and Tilbury lines, and parts of the North Staffordshire, the Sheffield between Leeds and Skipton. The Midland also have power to run over and use about five hundred miles of other companies' lines, but they exercise these powers upon, apparently, about 250 miles only.

Including the running powers over lines in the metropolis and suburbs previously analysed, and the smaller powers not enumerated above, the following shows the total mileage on foreign lines over which each of the principal companies may work for the purpose of collecting and distributing traffic as if integral parts of their own systems:

	Miles.	Miles.	
Caledonian	76	London & Southwestern	63
Glasgow & Southwestern	80	Man., Sheff. & Lincoln	113
Great Northern	80	Midland	230
Great Western	122	North British	116
Lancashire & Yorkshire	29	Northeastern	146
London, Brighton & South Coast	22	North London	98
London & Northwestern	558	North Staffordshire	121
		Southeastern	30

Criminal Trial of French Railroad Employes for Negligence.

On the 3d of February last there was an accident at the station of Chichy-Levallois on the Western Railroad of France, which became the subject of judicial examination. After long investigation and inquiry by experts, three employés who seemed responsible for the collision were brought before the criminal court, where their trial was held last July.

The accused were:

1. The conductor, Giffard, who was at the head of the train struck, and who should, according to the complaint, have enjoined on his colleague at the rear of the train to get down and put torpedoes on the track.

2. and 3. The switchmen, Hubert and Dupont, charged, with not having watched the service, and the other as quick as possible.

These three employés had excellent records.

M. Duverdy, their advocate, dwelt on the important point that the two men principally responsible paid for their imprudence with their lives, to wit, the conductor, Morel, who should have got off to put torpedoes behind the train that was struck, and the engineer Diendonne, who struck the train because he had run at an excessive rate of speed.

The prisoner Giffard, on the contrary, said Mr. Duverdy, ought not to have left his post, in accordance with the express terms of the regulations; he must have been possessed of genius to foresee that a train would arrive from the rear; as to the two switchmen, one had quitted work when the accident took place, the second took all wished for precautions, and the fog alone prevented him from informing the engineer of the second train in time. Mr. Duverdy therefore claimed the acquittal, pure and simple, of his three clients.

The court, in a decision giving the grounds of its action, acquitted the prisoner Giffard, and condemned the two switchmen to imprisonment for four months and \$10 fine, the Western Railroad Company remaining civilly responsible.

Commenting on this trial the *Revue Industrielle* says:

"We understand very well that after a catastrophe in which 16 persons were killed on the spot or died of their wounds, and in which 94 persons were more or less seriously wounded, there is reason to punish the guilty severely. But it is in narrow way of treating the question and pushing a little too far confidence in the administrative prescriptions to declare, as this decision does, that railroad operation is governed by a body of rules so planned as, when strictly executed, to prevent accidents altogether. At that rate the engineers of the railroad companies would have nothing more to do than fold their arms."

"No one can contest the utility of the regulations, but, in spite of their excellence, they cannot supply the exigencies of a service that grows more and more complicated. If the administrative prescriptions are of a nature to prevent all accidents, why do the companies take such interest in the improvements introduced in railroad operation? Why, for example, is the Northern Company applying Lartigue's automatic electric whistles and electro-semaphores, the Saxby & Farmer signal posts, and the vacuum brake? Why is the Western applying the Westinghouse brake? Is there not plain evidence of the insufficiency of the regulations and the necessity of supplementing them by perfecting the operating apparatus and the contrivances for controlling the running of trains?"

"It seems to us that the experts should, while holding the switchmen responsible for their part, have been able to show us that the companies are careful of the safety of the passengers and ready for any sacrifice in order to avoid the repetition of catastrophes against which the most perfect regulations are powerless. The public would have learned with pleasure that its existence was no longer at the mercy of a switchman or a conductor, and that the solicitude of the railroad managers was not confined to the compilation of regulations whose inefficiency we too often have occasion to show."

The Horrible Effects of the Elevated Railroads on the Horse Railroads.

The *Elevated Railroad Journal*, a paper published in the interest of the employés of the elevated railroads, several weeks ago published the following selections from the testimony given in suits to enjoin the construction and operation of the elevated roads, given by men who pretended to foresee what would happen. As there is not the slightest difficulty in getting the fiery untamed steeds of the street railroad companies to draw the cars under the elevated trains as quietly as anywhere else, it will be seen that these gentlemen were mistaken in their prophecy:

The subjoined extracts from the official record of the Supreme Court, General Term, "case on appeal," Sixth Avenue Horse Railroad vs. The Gilbert Elevated Railway Company, will probably be as interesting (at this time) to the gentlemen who made oath to the statements as it will be to the general public:

BEFORE JUDGE SEDWICK.

Theron R. Butler, President of Sixth Avenue Road, swore: (In the Complaint.)

p. 21. "That the running of trains of cars upon the said contemplated elevated railroad would ruin the plaintiffs' railroad and render its operation impracticable."

p. 22. "That a train of cars upon the said contemplated elevated railroad would so terrify the plaintiffs' horses as to render them unmanageable and cause them to run away, to injure themselves and smash the cars, and that such acci-

dents would deter people from riding in the plaintiffs' cars, from an apprehension of personal injury," etc.

(On Examination.)

p. 271. "That more than half of our horses would be frightened and sway off from the track whenever a steam engine passed them, and become fractious and unmanageable."

p. 272. "The horses would run against the posts; * * would frequently straddle, one horse one side and one the other; * * and the car could not be stopped in season to prevent its crushing and breaking their legs."

p. 273. "If the horses were frightened and swayed off from the track, they would take the car with them."

p. 273. "A timid woman would be afraid to ride under such a construction as that"—to ride the whole length of it."

p. 276. "The horses will be so frightened that they will not be able to do their work properly."

p. 290. "Timid people would be afraid to ride under that structure with a train of cars and locomotive on it."

p. 291. "Women would be afraid, especially if they had children with them."

George Law, President of the Eighth and Ninth avenue horse-car roads, swore :

p. 298. "You can't operate the Sixth avenue road with horses under the Gilbert Elevated Railroad structure."

p. 298. "As to running a [horse-car] road successfully, you couldn't do it."

p. 299. "I mean that you could not run horses under a structure like that. The effect would be to prevent your running horses under it."

p. 314. "A road cannot be practically operated under that [Gilbert] road."

Rudolph Ledbetter, Superintendent of the Broadway and Seventh avenue horse cars, swore:

p. 329. "The operation of a steam road above the horse railroad track would stop passengers from riding below."

Jacob Sharpe, Joseph B. Bidgood, G. Shepard, Isaac Tahlman, John G. Palmer, and forty-five other disinterested citizens, swore:

p. 326. "That the operation of the Sixth avenue elevated road would prevent the practical running of the Sixth avenue street cars by horses."

Would Theron R. Butler, George Law, Rudolph Ledbetter, Jacob Sharpe and the forty-eight unbiased citizens be surprised to learn that the Sixth avenue street railroad is running in excellent order at this writing (September, 1880), three years after their lugubrious predictions?

As all the preceding quotations were made by the respective parties in a court of justice, under the limitations of their solemn oaths, we must assume their ignorance of the fact just stated.

We therefore take the liberty of adding that the stock of the Sixth avenue horse cars sold in the Real Estate Exchange, at public auction, on May 6, 1878 (one month before the opening of the Gilbert Elevated Railway), at 69.

The same stock cannot be bought to-day (two years and three months after the opening of the Gilbert Elevated Railway) for less than one hundred and sixty.

Gentlemen of the horse-car fraternity, this eventful defiance of, or contempt for, your collective affidavits has no doubt distressed you exceedingly, and we would console you with you in all sincerity were it not that we have a latent suspicion that the three first and the forty-nine (disinterested) last sworn participated in the *pro rata* difference of horse-car stock at sixty-nine and the same at one hundred and sixty.

THE SCRAP HEAP.

Investigation of the Littleton Accident.

The Massachusetts Railroad Commissioners have investigated the accident on the Fitchburg Railroad at Littleton on Oct. 7, by which two persons were killed and a number of others injured. After detailing the circumstances of the accident the Commissioners say: "After the disaster occurred the train hands did the little that could be done promptly and intelligently, and they and the railroad officials who hastened to the spot acted with energy and humanity in caring for the injured. It is rarely that a railroad casualty leaves so little trace of its cause; and it is not easy to decide what was cause and what was consequence of the accident. But some points are clearly established: That the switch was closed and locked; that the destruction of the frog was the consequence and not the cause of the accident; that the cars were thrown inside the curved rails, and therefore could not have become detached while the train was going with great speed around the sharp curve; that the absence of check chains on the trucks of the Troy & Boston car did not affect the accident in any way; that the track was in excellent condition; that the defect in the guard rail of the switch was such as is usually found in fractured cast-iron beams, and could not have been discovered until the casting breaks, otherwise the beam was of usual size and the material was good."

The Commissioners conclude as follows: "It is impossible to decide how this beam was broken or just how it derailed the cars or whether it could derail them. Perhaps the mere pressure of the train, or of a freight train which had shortly before passed over it, fractured the casting; and the attention of the board has been called to six or seven cases where this has happened. The courtesy of a railroad manager has furnished the board with a broken casting from a Tyler switch on his road, which was fractured just as the Littleton casting was. In that case the spring of the switch caused the fracture, and resulted in derailing the cars. Perhaps a broken wheel contributed to the accident, but it is impossible to say whether or not the wheel was broken before the fracture of the switch casting. A careful search has failed to find any piece of broken flange between Fitchburg and Littleton. The wheels all appeared to be in good condition when they were inspected and tapped at Fitchburg. On the whole, the disaster appears to have been one which is not traceable to any defect of construction, equipment or management, and therefore, one which no amount of vigilance could have prevented. While this illustrates the fact that in spite of all precautions some danger will always attend railroad traveling, as it does all traveling, it is well to recall another fact: that for two years prior to this accident no passenger of the 130,000,000 carried had been killed in the cars of any railroad in this state. And it seems proper to state the additional fact that up to that time no passenger between Boston and Fitchburg had ever been killed or seriously injured from causes beyond their own control."

Managing a Crazy Man.

Several days ago two gentlemen got on the Erie Railway train in charge of Conductor Burt Van Tuyl, having in charge an insane man who was inclined to be unruly. He became incensed at something, and began to swear and show fight. This was especially unpleasant for the ladies in the car, and it was evident that trouble would ensue. Mr. Van Tuyl stepped up to the insane man, and with a pleasant smile said: "Why, how do you do, uncle?" "I'm all right," was the reply, "but some people seem to think that I am crazy." "That very strange," said Mr. Van Tuyl; "tell me all about it. By the way, won't you have a cigar?"

* Alluding to the elevated structure on Sixth avenue.

The insane man didn't care if he did, and when it was suggested that the smoke might be disagreeable to the ladies, he readily went into the smoking-car, where his troubles were forgotten, and he rode as quietly as any other passenger.—*Buffalo Courier.*

Waste.

The Atlanta *Constitution* discovers that the railroads running into that city have in their employ a Pope and an Angel; Day and Knight; Brown, White, Gray and Blue; Mills, a Miller and a Baker; Wood and Beach; Rice, Curd and Bacon; a Lyon and a Badger; a Drake, a Jay, a Crowe, a Prott and a Wren; and lastly a Whitehead and a Great-head.

Tall engineer enters Superintendent's office and inquires if it is true, as his stoker has informed him, that the company means to dispense with his services?

The Superintendent.—I am not aware of it. (To stoker.) Did you tell him so?

Stoker.—Well, sir, yes; I told him the company didn't want him any longer.

The Superintendent.—And what authority had you to tell him that?

Stoker.—Why, sir, good gracious, you don't want him any longer, do you? He's nearly seven feet now!—*Grand Trunk Humor in Grip.*

"Stinking Wells" is the cheerful name of a place upon a new railway in Nevada. The brakemen will take great pleasure in shouting it out distinctly.

ANNUAL REPORTS.

The following is an index to the reports of companies which have been reviewed in previous numbers of this volume of the *Railroad Gazette*:

Page.		Page.	
Alabama Great Southern.....	417	Lehigh Coal & Nav. Co.	107
Allegheny Valley.....	162, 225	Lehigh Valley.....	131
Atchison, Topeka & Santa Fe.....	320	Little Miami (P., C. & St. L.)....	275
Atlanta & Charlotte Air Line.....	220	Louisville, Cincinnati & Lexington.....	479
Atlanta, Miss. & Ohio.....	364, 478	Louisville & Nashville.....	335, 417, 551
Atlantic & North Carolina.....	364	Maine Central.....	202
Baltimore & Potowmack.....	152, 319	Mass. R. R. Commission.....	45
Boston & Albany.....	56	Michigan Central.....	241, 250
Boston, Concord & Montreal.....	74	Minneapolis & St. Louis.....	152, 417
Boston & Lowell.....	43	Montgomery & Western.....	53
Boston & Worcester.....	43	Mobile & Montgomery.....	152
Bur. Cedar Rapids & No. Mo. River in Nebraska.....	417	Mobile & Ohio.....	430, 431, 432
Burlington & Northwestern.....	81	Montpelier & Wells River.....	124
Canada Southern.....	237	Morris Essex.....	312
Cape Fear & Yadkin Valley.....	237	Nashua & Lowell.....	304
Carolina Central.....	25, 337	Nashville, Chattanooga & St. L.	5, 5
Central of Georgia.....	25, 337	Naugatuck & New Haven.....	203
Central of New Jersey.....	25	New Hampshire Minor Roads.....	53
Central Pacific.....	557	N.Y. Lake Erie & West.	12
Central Vermont.....	4, 7	N.Y. N. H. & Hartford.....	29
Charlotte, Col. & Augusta.....	1, 1	N.Y. Providence & Boston.....	25
Charterers (P., C. & St. L.).....	213	N.Y. & Oswego Midland.....	11
Chesapeake & Del. Canal.....	326	Northeastern (S. C.).....	374
Chesapeake & Ohio.....	96	Northern Central.....	123
Chesapeake Ohio Canal.....	96	O & W. (N. H.).....	200
Cincinnati & Atlantic.....	166	Northern Pacific.....	200
Cinc. & Burlington & Quincy.....	169	Ogdensburg & Lake Champlain.....	4, 6
Chi. Cl. Mt. Dub. & Minn.	173	Ohio & Mississippi.....	151
Chicago, Mil. & St. Paul.....	206	Or. g. Ry. & Nav. Co.	464
Chicago & Northwest.....	444, 449	Pacific Mail.....	312
Chicago Pacific.....	98	Paducah & Elizabethtown.....	23
Chi., Rock Island & Pac.	351	Panhandle & Missouri.....	3
Chi., Cl. Mt. Dub. & Minn.	170	Pennsylvania Railroad.....	136
Cin. Hamilton & Dayton.....	214	Pennsylvania & New York.....	152
Cin., Ind., St. L. & Chi.	213	Philadelphia & Reading.....	38
Cin., Ind., St. L. & Chi.	213	Phila. & Balt. & Baltimore.....	11
Cin., Ind., St. L. & Chi.	213	Pitts., Chi. & St. Louis.....	218
Clev., Col., Cin. & Ind.	184, 188	Pitts., Chi. & Lake Erie.....	355
Clev., Col., Cin. & Ind.	184, 188	Pitts., Chi. & Lake Erie.....	355
Clev., Col., Cin. & Ind.	184, 188	Pitts., Chi. & Lake Erie.....	355
Clev., Col., Cin. & Ind.	184, 188	Pitts., Chi. & Lake Erie.....	355
Clev., Col., Cin. & Ind.	184, 188	Pitts., Chi. & Lake Erie.....	355
Col. & Hocking Valley.....	214	Pitts., Chi. & Lake Erie.....	355
Concord.....	293	Pitts., Chi. & Lake Erie.....	355
Conn. & Passaic Rivers.....	565	Pitts., Chi. & Lake Erie.....	355
Cumberland Coal Co.	1, 2	Pitts., Chi. & Lake Erie.....	355
Cumberland Valley.....	1, 2	Richmond & Petersburg.....	17
Dan. ton & Southwester.....	7	Riv. w. Town. & Ogdensburg.....	11
Delaware.....	56	Rutland.....	135
Delaware & Bound Brook.....	3, 2	S. Louis Bridge Co.	3, 1
Delaware & Hudson Can.	178	S. Louis Iron Mt. & Southern.....	177
Del. & Hud. Can. Leased Lines.....	178	S. Louis, Vicks., Terre Haute, ...	178
Delaware & Hudson Can.	178	St. Louis, Vicks., Terre Haute, ...	178
Delaware Western.....	25	St. Paul, Minn. & Man.	290
Detroit, Grand Haven & Mich.	512	Seaboard & Roanoke.....	293
Detroit, Lan. & No.	509	South Carolina Railroads.....	4
East Line Red River.....	476	Southern Pacific.....	476
East Tenn., Va. & Ga.	395	St. Louis, S. W. & San Fran.	351
Eagle, Houston & Henderson.....	70	Troy & Greenfield.....	417
Georgia R. R. & Ban. Ing. Co.	298	Union Pacific.....	151
Grand Rapids & Indiana.....	374	Utica & Black River.....	4, 4
Grand Trunk.....	261	Vermont Valley.....	3, 8
Great Western.....	291	Vicks., Memph. & Mobile.....	312
Han. June, St. Joseph.....	161	W. & St. Louis & Pacific.....	25
Hannibal, St. Louis & Gulf.....	171	W. & St. Louis & Pacific.....	25
Hannibal, St. Louis & Gulf.....	171	W. Ches. & Phila.	25
Houston & Texas Central.....	364	Western, of Alabama.....	294
Huntingdon & Broad Top.....	96	Western North Carolina.....	185
Illinois Central.....	118, 123	Western R. R. Association.....	46
Indianapolis, Bloom. & West.	5, 2	Wilmingt. C. & A. & Augusta.....	1, 8
Intercolonial.....	152	Wilmingt. C. & A. & Augusta.....	1, 8
Wisconsin Central.....	185		
Kentucky Central.....	319	Wisconsin Valley.....	178
Lake Shore & Mich. south.....	252, 2, 8	Worcester & Nashua.....	237

Indianapolis, Decatur & Springfield.

This company owns a line from Decatur, Ill., to Indianapolis, Ind., 152.5 miles, with 15.26 miles of sidings. Its report is for the year ending Aug. 31, 1880:

The balance sheet, condensed, is as follows:	
Stock (\$3,279 per mile)	\$500,000.00
Bonds (\$3,649 per mile)	4,369,000.00
Accounts and balances	101,306.86
Profit and loss	64,119.96
Total	\$5,034,426.82
Cost of property, construction and equipment accounts (\$32,047 per mile)	\$4,887,251.00
Cash and receivables	66,381.18
Uncollected revenue and accounts	43,552.01
Materials	23,242.63
Sinking fund, first-mortgage bonds.....	14,000.00
	5,034,426.82
The bonded debt consists of \$1,700,000 first and \$2,663,000 second-mortgage bonds. Construction accounts were increased during the year by \$40,823.36 on the Western Division or older portion of the road, and \$89,300.54 on the Eastern Division, the extension to Indianapolis. Total cost of the Eastern Division has been \$1,400,627.35.	
The road was not put in operation through to Indianapolis until Feb. 9, 1880, and the new part was not really in good condition till April. Large expenditures were also needed to put the old part of the road in good condition. No comparisons are made in the report, as the extension made a radical change in the business and operations of the line.	
The traffic was as follows:	
Mileage of passenger-train cars.....	368,966
" freight cars.....	1,667,136
Passengers carried.....	89,525
Passenger mileage.....	1,853,861
Freight mileage.....	149,634
Tonnage mileage.....	10,438,978
Average receipt per passenger per mile.....	3.66 cts.
" ton per mile.....	2.22 "

The average number of passengers per car mile was 5.88

The average tonnage of each loaded freight car was 10.6 tons; 41 per cent. of the freight car mileage was of empty cars. The average receipt per passenger car mile was 22.3 cents; per freight car mile, 23.5 cents. Local business furnished 89 per cent. of the passenger mileage and 86 per cent. of the tonnage mileage. The chief items of freight were grain, lumber and coal.

The earnings for the year were as follows:

Passengers	867,821.10
Freight	231,514.18
Mail, express, etc.	40,514.81
Total (\$2,228.52 per mile)	\$339,850.00
Expenses (58.01 per cent.)	197,165.29

Net earnings (\$925.63 per mile)

\$142,684.80

President Hammond's report says: "The business of the company is in its infancy, and very much of the traffic which it must command is still undeveloped. For instance, its railroad runs through 15 miles of territory underlaid with valuable coal, of which there has been no opening except for individual use. It also runs through a territory rich in stone valuable for building purposes, which has only been quarried to a limited extent to supply an immediate

NEW JERSEY MINOR RAILROADS IN 1879.

NAME OF ROAD.	PROPERTY.					CAPITAL.			EARNINGS.					PAYMENTS FROM NET EARNINGS.			
	Road owned.	Road leased.	Loco-motiv's	Pass. train cars.	Freight cars.	Stock.	Bonds.	Other debt.	Gross Earnings	Exp'n's	Net earnings.	Gross earn. per mile.	Net earn. per mile.	P. c. of exps.	Interest.	Divid'ds.	
Blairstown.....	11.3	.....	2	3	9	\$117,110	.....	.....	\$5,205	\$4,045	\$1,180	\$461	\$103	77.8	.....	.....
Camden, Gloucester & Mt. Ephraim	6.0	.....	.....	.....	.....	64,500	\$62,100	9	14,833	15,489	*656	2,472	97	104.4	.....	.....
Charlotteburg & Green Lake.....	4.5	.....	.....	.....	.....	100,000	.....	.....	4,690	4,254	430	1,042	97	90.7	.....	.....
Delaware Bay & Cape May.....	3.0	.....	.....	.....	.....	24,000	.....	.....	10,969	8,532	2,437	3,656	812	77.8	.....	.....
Ferro Monte.....	2.0	.....	.....	.....	.....	30,000	.....	6,500	10,691	8,812	1,879	4,276	752	82.4	.....	.....
Freehold & New York.....	13.5	.....	.....	.....	.....	200,000	200,000	1,208	*28,783	26,858	1,95	2,124	147	93.3	.....	.....
Hibernia Mine.....	5.5	.....	2	.....	100	150,000	.....	.....	37,141	15,618	21,523	6,753	3,913	42.1	.....	.....
Mt. Hope Mineral.....	4.3	.....	1	.....	23	160,000	.....	.....	29,736	12,371	17,367	6,916	4,030	41.6	.....	\$10,500
New Jersey Midland +	71.0	14.0	14	23	190	2,600,000	5,400,000	.....	745,070	740,119	4,951	8,765	.....	.....	.....	.....
New Jersey & New York +	30.5	6.0	5	20	40	1,187,400	1,034,500	416,814	151,504	127,859	25,645	4,206	703	89.3	.....	.....
New York & Greenwood Lake.....	40.0	.....	.....	.....	.....	100,000	2,700,000	.....	118,332	149,457	*31,225	2,056	126.4	.....	.....	.....
Northern +.....	21.3	.....	2	.....	.....	102	450,000	390,000	239,356	184,357	54,900	11,237	2,582	77.0	\$28,000	22,500
Ogden Mine.....	10.0	.....	.....	.....	.....	.....	.....	.....	27,328	12,092	14,336	2,733	1,434	47.3	.....	13,500
Tuckerton.....	31.0	.....	2	5	23	.....	207,924	408,000	136,242	22,572	20,694	1,878	61	91.7	.....	.....
Warren §.....	18.3	.....	.....	.....	.....	1,800,000	1,350,000	13,141	490,041	176,842	313,199	26,042	17,115	36.1	94,500	120,000
Williamstown.....	0.5	1	2	8	30,000	250,000	9,751	9,438	313	1,026	33	96.8

* Deficit.

† Receivers' report; expenses include all disbursements.

‡ Operated by New York, Lake Erie & Western under contract.

§ Leased to Del., Lacka. & Western.

The Figures above are from the reports made to the Comptroller of New Jersey, for the year 1879. All roads are included which do not otherwise report. The reports do not give traffic. The Ogden Mine road carried 49,326 tons iron-ore and 3,791 tons coal; the Hibernia Mine road 99,123 tons ore and 4,619 tons coal.

bonds now outstanding or for their payment when they become due, £258,000 have been sold, and the remaining £350,000 are deposited in bank, designed to be executed and sold as the future necessities of the company for construction of branch lines, etc., may require."

Grand Trunk.

This company's latest report covers the half-year ending June 30, 1880, and includes the operation of the whole system of 1,273½ miles worked. Comparisons are made with the corresponding half of 1879, when the mileage worked was 1,390¾ miles, the company then owning the Riviere du Loup Division, since sold to the Canadian government, and now a part of the Intercolonial road.

The expenditure on capital account for the half-year was £96,131; but as there have been credited to this account (1) the amount received from the Dominion Government for the Riviere du Loup Line, and (2) an amount received during the half-year as premium on debenture stock issued, the total expenditure has been reduced by £222,244. There has been issued during the half-year £106,000 of debenture stock at a premium of nearly 5 per cent., out of the proceeds of which £51,800 of first equipment mortgage bonds have been redeemed, and the balance has been applied to general purposes.

The earnings, etc., for the half-year were as follows:

	1879.	1879.	Inc. or Dec.	P. c.
Gross receipts.....	£91,992	£832,639	I.	£1,39,123 19.1
Working expenses.....	675,345	634,423	I.	40,922 6.5
Net earnings.....	£316,647	£198,446	I.	£118,301 59.6
Add interest on International Bridge capital.....	10,434	12,980	D.	2,546 19.6
Add interest on Chicago & Grand Trunk bonds.....	16,167	.....	I.	10,167
Total.....	£337,248	£211,426	I.	£125,822 59.5
Deduct postal and military bonds not retired.....	428	D.	438	100.0
Balance.....	£337,248	£210,988	I.	£126,290 59.8
Per cent. of expenses.....	68.08	76.17	D.	8.09 10.6

Freight earnings increased 24.1 per cent., and passenger earnings 11.5 per cent., but mail and express earnings showed a decrease, chiefly on account of the loss of the Riviere du Loup Division. The increase in earnings was in the face of the decrease in mileage from 1879.

The traffic carried was as follows:

	1880.	1879.	Increase.	P. c.
Passengers.....	892,825	845,637	47,198	5.6
Tons freight.....	1,478,103	1,24,838	203,265	16.0
Av. rec't per pass.....	63.6d.	60d.	3% d.	5.2
Av. rec't per ton.....	117.9d.	110.9d.	7d.	6.3

The fact that the increase in tonnage was less than that in earnings indicates the prevalence of improved rates during the half-year.

The increase in expenses was largest in maintenance of property. The apportionment of expenses was as follows, with their proportion to gross earnings for the half-year :

	1880.	1879.	Decrease.
Maintenance of property, per cent. of expenses.....	24.44	25.80	1.36
Working the road	43.64	50.37	6.73
Total.....	68.08	76.17	8.09

Expenses include all renewals of road and equipment.

The income account was as follows :

	Net balance as above.....	£337,248
Interest on lands, Montreal Seminary, Island Pond and Brit. Am. L. Co. debentures, less interest received.....	46,193	
Atlantic & St. Lawrence lease.....	52,540	
Lewiston & Auburn rent.....	1,849	
Det'r'l Line Lease.....	11,250	
Montreal & Champlain interest.....	8,515	
Buffalo & Lake Huron r'n't.....	35,000	
Equipment bond interest.....	26,925	
Perpetual debenture stock, 5 per cent.....	72,480	
	214,701	
Net balance for the half-year.....	£122,487	
Brought forward from previous half-year.....	1,440	
Total balance.....	£123,927	

Out of this balance a dividend for the half-year at the rate of 5 per cent. per annum on the first preference stock has been paid, absorbing £80,374 and leaving a balance of £43,553. As regards the appropriation of this balance of £43,553, the board resolved, after obtaining the opinion of eminent counsel on the Arrangements Act of 1873, to pay a dividend on the second preference stock for the half-year at the rate of 3 per cent. per annum, absorbing £34,893, and leaving £8,659 to be carried forward to the current half-year. This dividend will accrue to the holders of second preference stock registered in the books of the company on Oct. 4, and the warrants will be payable, as already notified, on Nov. 1.

The Chicago & Grand Trunk Railway was opened for traffic from temporary stations in Chicago to Port Huron on Feb. 8; and, under the decision of the American Board of Arbitration, 10 per cent. of the freight traffic and 6 per cent. of the live-stock traffic out of Chicago have since been awarded to that railway. Its access to the proposed permanent stations in Chicago has until recently been retarded by legal obstructions. These having at length been removed, increased facilities for passenger and freight traffic will be afforded.

Explanations of the agreements to be offered for the action of the stockholders at the half yearly meeting are promised at the meeting.

Ohio & Mississippi.

The following report was presented at the recent annual meeting in Cincinnati, by the President, Mr. Wm. F. McClinton :

The usual annual reports of the President and board of directors of the operations of the company have been intermittent since the year 1876, because the entire property of the company since Nov. 17 of that year has been in the custody of the Circuit Court of the United States for the District of Indiana, and has been operated and managed by a receiver appointed and acting under the orders of that Court, with proper supplementary powers from other courts having jurisdiction over the property of the company located beyond the limits of the state of Indiana. The Receiver in addition to his monthly reports of receipts and disbursements made, as required by the order of his appointment, has made and published four general reports, the first two covering the period from Nov. 17, 1876, to Dec. 31, 1877, and the others the years ending Dec. 31, 1878, and Dec. 31, 1879, respectively. His next report in course will be for the year ending Dec. 31, 1880, which it is presumed will be made and published as soon after that date as the accounts and statements can be prepared for that purpose. In view of the time yet to elapse before this expected report can be made, the stockholders and bondholders of the company will be gratified to learn that the business and net earnings of the road have steadily increased since the Receiver's appointment in 1876. His reports show that the net earnings for the year ending Dec. 31, 1877, on both the main line and Springfield Division were, £86,299; for the year 1878, £86,517 62; for the year 1879, £1,051,413.97, while for the nine months of the current year, say to Sept. 30 (the earnings for September being estimated approximately), the net earnings were £553,332.85, against £513,284.52 for the corresponding period of 1879, and for the entire year will probably be about £1,300,000. The earnings of the Springfield Division were less than expenses for the year ending Dec. 31, 1877, by the sum of £43,169 62; for the year 1878, £26,920.36; for the year 1879, £37,778.26. These deficits were taken into the account in making up the amount of net earnings of the main line and Springfield Division, as above stated. The directors are advised by the Receiver that the net earnings have been applied to the payment of all the matured interest coupons on the company's first-mortgage bonds, a part of the past due interest on the second-mortgage bonds and other recognized obligations of the company, in strict accordance with the orders of the Court, whose officer he is, and that in the mean time the road has been gradually improved by large but needless and judicious expenditures (charged to expenses) for steel and iron rails, new cross ties, renewals of bridges and trestles, the building of new structures and the renewal or repair of old ones, so that the property of the company is in better condition than at any previous period, and the track of the main line by the end of the current year will be in nearly perfect order. Very considerable sums have also been expended upon the Springfield Division in the renewal or repair of bridges and trestles, or in substituting embankments for the latter, and in general repairs of track and road bed, so that the division is now reported in condition to be operated with entire safety. The board deem it unnecessary to go into further particulars, as the Receiver's reports cover all the details of receipts and disbursements, both in the operation and management of the road and in the payment of debts and interest, to which reports reference is made for such information in detail.

Great Western, of Canada.

This company's report covers the system of 527.38 miles worked, the Main Line, from Suspension Bridge to Windsor being 229.38 miles; the Loop Line, from Glencoe to Ft. Erie, 145.50 miles; branches owned, 137.67 miles, and leased, 14.83 miles—the last named being a section of the Welland Railway used to make connection between the Loop Line and Suspension Bridge.

The company also leases the Wellington, Grey & Bruce, 180.35 miles; the London, Huron & Bruce, 68.89 miles, and the Brantford, Norfolk & Port Burwell, 34.74 miles, but the report gives only the net result from these 295.64 miles of road.

The report is for the half-year ending July 31, 1879, comparisons being made with the corresponding half of last year.

On capital account, an amount of £32,400 5 per cent. perpetual debenture stock has been issued during the half-year, to provide for repayment at maturity of terminable bonds, bearing interest at 7 per cent. The charge to capital account, amounting to £19,677, consist principally of the proportion of the cost of renewing wooden bridges in stone and iron, and the acquirement of bonds of the Wellington, Grey & Bruce Railway, under traffic agreements with that company.

The income or revenue account was as follows :

	1880.	1879.	Inc. or Dec.	P. c.
Gross receipts.....	£437,433	£365,771	I.	£27,662 19.5
Working expenses.....	301,228	276,971	I.	24,257 8



Published Every Friday.

CONDUCTED BY

S WRIGHT DUNNING AND M. N. FORNEY.

CONTENTS.

CONTRIBUTIONS:	Page.	ANNUAL REPORTS:	Page.
Fast Locomotive -- Cylinder Capacity.....	565	Evansville & Terre Haute.....	568
Through Rates and New Through Lines.....	570	Grand Trunk.....	569
Progress of the Law as to Construction.....	571	Ohio & Mississippi.....	569
The German Railroad Union in 1878.....	571	Great Western of Canada.....	569
Foreign Railroad Notes.....	572	New Jersey Minor Railroads.....	569
Record of New Railroad Construction.....	573	MISCELLANEOUS:	
EDITORIAL NOTES:	573	French Freight Tariffs and Government Control.....	565
GENERAL RAILROAD NEWS:		Statement of the Engineer in Charge of the Hudson River Tunnel.....	566
Meetings and Announcements.....	574	The Wabash Settlement.....	567
Elections and Appointments.....	574	Running Powers Over Foreign Lines in Great Britain.....	567
Personal.....	574	Criminal Trial of French Railroad Employés for Negligence.....	567
Traffic and Earnings.....	575	The Horrible Effects of the Elevated Railroads on the Horse Railroads.....	567
Traffic Law.....	575	Locomotive Returns, June, 1880.....	568
The Scrap Heap.....	576		
Old and New Roads.....	576		
ANNUAL REPORTS:			
Indianapolis, Decatur & Springfield.....	568		

EDITORIAL ANNOUNCEMENTS.

Addresses.—Business letters should be addressed and drafts made payable to THE RAILROAD GAZETTE. Communications for the attention of the Editors should be addressed EDITOR RAILROAD GAZETTE.

Advertisements.—We wish it distinctly understood that we will entertain no proposition to publish anything in this journal for pay, EXCEPT IN THE ADVERTISING COLUMNS. We give in our editorial columns OUR OWN opinions, and those only, and in our news columns present only such matter as we consider interesting and important to our readers. Those who wish to recommend their inventions, machinery, supplies, financial schemes, etc., to our readers can do so fully in our advertising columns, but it is useless to ask us to recommend them editorially, either for money or in consideration of advertising patronage.

Contributions.—Subscribers and others will materially assist us in making our news accurate and complete if they will send us early information of events which take place under their observation, such as changes in railroad offices, organizations and changes of companies, the letting, progress and completion of contracts for new works or important improvements of old ones, experiments in the construction of roads and machinery and in their management, particulars as to the business of railroads, and suggestions as to its improvement. Discussions of subjects pertaining to ALL DEPARTMENTS OF railroad business by men practically acquainted with them are especially desired. Officers will oblige us by forwarding early copies of notices of meetings, elections, appointments, and especially annual reports, some notice of all of which will be published.

THROUGH RATES AND NEW THROUGH LINES.

East-bound traffic, which has been comparatively light since August, during the past week has increased so that most of the roads have difficulty in obtaining cars enough to supply the demands of shippers, which condition of things, if it lasts a little longer, is sure to result in an advance of rates. For provisions an advance of 5 cents per 100 lbs. from Chicago to New York is already announced, to take place Nov. 1. For grain opinions are divided as to the best time for an advance, and the course of water rates will have much to do with it. Lake rates have not maintained the advance of a week ago, and there was no advance in canal rates to speak of until last Monday, and they are still very much lower than usual at this time. However, the time for canal shipments is now very short, and on this account it may be best to postpone any advance in rail rates until it is over (unless the demand for cars should be altogether too great), or till about the middle of November. Last year the rate was advanced from 30 to 35 cents Oct. 13, and to 40 cents Nov. 10. As ten days notice of an advance must be given, it must be pretty nearly the latter date before a 35-cent rate can possibly be reached this year, and so late that it will be practically a winter rate; but it is quite questionable if the condition of business will bear a winter rate higher than 35 cents on grain the coming winter. The circumstances were peculiar that made it possible to maintain a 40-cent rate throughout last winter, and there is very positive danger in having the through rates too profitable. There has now been but a single year that through rates have been continuously profitable, and this is the first year since 1874 that the whole year's profits on this business have amounted to a considerable sum, while for two or three years previous it is questionable whether there was any profit, taking the year through, on the east-bound business, so that there was very little temptation for roads that had none of it to go to any considerable expense in the way of building extensions and connections in order to secure a share of it. But in this little time that the business has been profitable numerous

schemes have been formed, and several are in the way of accomplishment, for making new routes for the through traffic which will reduce the shares of some or all of the existing routes. This has been the effect of the Chicago & Grand Trunk, and it will be of the Detroit & Butler, not to speak of the New York, Lackawanna & Western and the more or less vaguely planned lines for through traffic west of Buffalo. Now nothing can be more certain that it will cost less to have this traffic carried over few than many roads, unless it is that there will be many of them if rates are high enough to make them pay with such local traffic as they may be able to command. But this can only be if the old roads are very profitable—that is, pay a very large interest on what it will cost now to build a similar road. For the new competitors do not have to take into account that the New York Central's capital is at the rate of \$175,000 per mile, the Erie's \$267,000, the New York, Pennsylvania & Ohio's \$310,000 per mile, but only of the amount that their own roads will cost. If they can build and equip an efficient road and secure terminal facilities for a capital of \$60,000 per mile, they need trouble themselves only to get net earnings enough to pay interest on that amount. Now just as soon as it appears that the through traffic alone shared by three roads yields a profit of \$6,000 per mile on each, and that a fourth costing but \$60,000 per mile will be able to get a quarter of it, there is at once a great temptation to construct a new road, with the hope of getting \$4,500 a year profit on \$60,000 expended. It may very well be that even with profits of \$6,000 per mile and a good deal from local traffic that a new road would not get, one of the old roads, with a capital of \$200,000 per mile, pays little more than interest on its bonds, and small if any dividends; that makes it bad for its stockholders that a new road should be built; but the new company considers only its own stockholders, and this is the way that, in every business, the prices of things are kept down to a proper proportion to their cost, and to their cost by the latest and most economical methods of production, not simply by the methods and machinery that the present producers happen to possess.

Now for a year past through traffic eastward has yielded probably something like 40 per cent. more than the average rates of the previous year, and considering the enormous bulk of this traffic on the trunk lines and their immediate western connections, this has yielded a very large addition to the profits of these roads. As at the same time this traffic is increasing rapidly, and other transportation is increasing, the temptation becomes very strong to get a share of this business, lately hardly worth having, but now become profitable. In times like these, when capital is abundant and confidence in the continuance of prosperity seems unbounded, investors seem to take it for granted not only that through traffic will continue to increase rapidly (which is sure), but that rates will be as profitable hereafter as they have been for a year past, which not only is not sure, but is, we think, altogether improbable, and to the great carriers is absolutely undesirable.

Heretofore for many years there had been a great and a rapid decrease in the rates on through freight. Without any kind of doubt this had gone too far. Western produce was carried for less than cost, and either the owners of the railroads received an insufficient income on their investments, or other traffic paid unduly high rates. And after a series of years of misfortunes it was right that railroad proprietors should share in the benefits of the revival of business and make up by extra profits for part of the losses of previous years; they will have to get large dividends for a long time to come to make up for all these losses. But in their own interest it will be necessary to restrict their profits on through traffic, else they are likely to find new competitors enter the field, who will at once deprive them of a part of this traffic and reduce the rates on all of it.

It may be said that in these times rates are not likely to be reduced by the intervention of a new competitor, but that the old roads will combine with it to maintain rates and grant it a share of the business. Certainly the tendency is in that direction now; but this leads us to the conclusion that in this way the community is likely to be a great sufferer from the multiplication of routes. For the addition of a new route only adds to the amount of a net profit which is required to support the roads. Suppose three routes from New York to Chicago representing \$100,000,000 each and supported entirely by through traffic. With a traffic of 2,000,000 tons each at \$7 per ton (35 cents per 100 lbs.) and working expenses 50 per cent. they earn net \$7,000,000 each, or 7 per cent. on their capital. A fourth road enters, and, so long as the traffic remains the same, to earn 7 per cent. they must make the same profit from one-fourth less traffic, or 1,500,000 tons

each. An advance of one-fourth in the rate would make the gross earnings as large as before, but unfortunately when the traffic is reduced one-fourth the expenses cannot be reduced in anything like the same proportion, probably not a tenth; but let us say an eighth. Then to make the same profit the roads will charge (if they can get it) for carrying 1,500,000 tons the cost of carrying it, \$6,125,000, plus \$7,000,000, or \$13,125,000, or \$8.75 per ton, instead of \$7.

We rarely are able to see this effect, first, because the cases are few in which through rates can be advanced, and, second, because in this country freight traffic grows so fast that even after the appearance of a new competitor the old roads usually have as large a business as ever. This latter, however, makes no difference whatever in the effect of the new competitor. The old road may have as much as ever before, but it has just so much less than it would have had if the new road had not been built. In the instance above, if the Chicago business had grown to an aggregate of 8,000,000 tons the four roads would have 2,000,000 tons each, just as the three roads had before, and at the old rate all could make the same rate of profit. But what would happen if there was no new route? Why, the old roads would each have one-third more traffic, and could therefore carry it at a less cost per ton, so much so (as all experience proves) as to more than balance the interest on the small addition to capital (chiefly for equipment) required to enable it to handle a larger traffic. And with one-third more traffic it could earn net \$7,000,000 with one-fourth less profit per ton. Instead of the profit of \$3.50 that it had to charge to make that amount from the smaller traffic, it would need to make a profit of but \$2.62½; and instead of a rate of \$7 per ton, one of \$6.12½ would serve the same purpose.

Until the country is sufficiently supplied with roads for local traffic, this works very well. The profits on business between Buffalo and New York serve to reduce the necessary profits and therefore the necessary rates on the local traffic of a road between those two places. Suppose the New York Central to have it all and the Erie to end forty miles this side of Buffalo, with no Western connections. Then the Erie will have to be supported wholly by the local traffic, and the places on the New York Central will have a tremendous advantage by having the through traffic pay part of the interest on the cost of the road that serves them. The Erie towns cannot use the New York Central, and it is greatly to their advantage that their road should obtain such connections as will enable it to get a share of the profit from the through traffic. But the case is different when a road like the proposed New York, Lackawanna & Western is built almost directly alongside of the Erie. It will serve no new country; the Erie alone must be able to do the whole business at very much less cost for working expenses than it and the Erie together, to say nothing of the interest on the cost of the new road. The sum of the national wealth must inevitably be decreased by such an addition to our railroads, and it is not easy to see how its construction can be justified in the private interests of its owners unless the existing roads are making much more than the average interest on the sums invested in them, or rather on that necessary to provide equally effective railroads.

In this way the community may be thought to have some protection against extravagant charges on through traffic; but, as we have tried to show, the tendency, though very effective in preventing unusually large rates of profit on railroad investments, is rather to keeping up than forcing down the rates that the community pays for transportation. Instead of paying 10 per cent. on \$20,000,000 invested in two roads, it probably pays 7 per cent. on \$30,000,000 invested in three roads, besides more for the expenses of the larger number of roads. Doubtless there will be less public complaint in the latter case, but there is none the less greater loss to the community, which is just as much interested as if it were an individual in having its work done with the least machinery necessary to do it in the cheapest and most efficient way. We may be perfectly certain, however, that in our day and in this country the public will not complain because railroads are multiplied needlessly. But it is a matter that immediately concerns the proprietors of the existing railroads, and they have more power in the premises than they are apt to suppose. What they can do to prevent the construction of needless railroads—railroads to do a work for which routes are already provided—is to see that the work is done so cheaply that an additional road cannot get its support out of it, and do this before, and not after, capital for the new road has been provided. If there is local traffic enough to support the new road mostly, it cannot be prevented in this way, and it is not desirable (in the interest of the community) that it should be; but if there is not, then capi-

talists who know what they are about will not put their money into a competing line that cannot get profits enough to support it.

It must be said, however, that in times of general prosperity it is often easy to get capital for roads that are almost sure not to pay. There is always a great army of projectors ready and anxious to build railroads anywhere for the sake of the profits to be made in their construction. Thousands and thousands of miles of such roads were built before 1874, and though, in spite of the abundance of capital and the revival of confidence and the spirit of enterprise, comparatively little has been subscribed for roads of that kind recently, yet the signs are that less and less caution is used in making investments, and it may soon be possible to get capital for the most preposterous schemes. But it will certainly be a great deal easier to get capital for them if the profits on the through traffic on the existing roads are large, because they are sure of being able to get on share of this traffic.

But for this probability of new roads being built almost solely to divide the through traffic, it is questionable whether it would not be best to maintain through rates as high as the condition of business and the competition of the water routes would permit, and as business grows and profits increase *reduce the local rates*. Though our through rates this year have been higher (on the average) than for some years previous, they have still been lower than anywhere else in the world; which is not true of our local rates on most of our roads, and this difference between through and local rates is always a cause of complaint. In any event a large difference would be necessary, and the tendency to the multiplication of through lines goes to reinforce the causes which compel it and may enlarge it. In the interest of the local traffic itself it becomes necessary to keep the through rates very low.

This is not a matter of temporary interest only, but one for all time. If one-third of the through traffic between New York and Buffalo now will be sufficient to support a new road between those two places, it will not be long before the traffic will have so increased that it will pay to make a fourth line—and so elsewhere, and for an indefinite future period. Instead of a reduction of rates, a multiplication of roads will follow the increase of traffic, and a needless amount of capital and proportion of production will be expended on transportation.

Progress of the Law as to Construction.

Very recently reported decisions illustrate some questions of practical importance at the present day, relative to the liabilities of the companies for injuries incident to the construction of their road. Prominent among such questions may be mentioned one which has been raised in New York city by householders and shopkeepers upon the streets through which the elevated railroads are built. A test case was presented in the Superior Court, raising the question whether such persons have not some remedy for the inconveniences and depreciation which the roads cause to the buildings close by. It seems strange, but it is confidently stated, that none of the various decisions of the Court of Appeals, in the very complex litigation which arose four or five years ago involving the right of the company to build in the streets, passed upon this question of the incidental injury to neighboring property. In the Superior Court it was treated as a question substantially novel; and the decision was in favor of the aggrieved householders. The general ground of the decision was the familiar right to have compensation for whatever property was taken for public use. The court said that "property" in this rule includes not merely tangible lands and chattels, but all valuable rights connected with them; it embraces the entire enjoyment of the various subjects of property, whatever they are. Property in a city lot and buildings thereon includes the right to occupy it free from disturbances from nuisances. And if a railroad deprives the lot-owner of this enjoyment of his property by its noise, smoke and smell, his property may fairly be considered to be taken. The decision yet awaits review by the Court of Appeals.

It is worthy of notice that, at just about the same time, the Supreme Court of the United States rendered a decision on the same general subject. During an extensive conflagration, which could not otherwise be controlled, the authorities of a city fire department put kegs of powder in a building in the course of the flames and demolished it by explosion. The owner sued for damages, and quoted the constitutional rule. But the Court decided against the claim. The ground of the decision is understood to be that when buildings are blown up to stop the progress of a fire they are destroyed—not taken for public use. As the

question is one of construing the constitution, the decision of the Supreme Court at Washington will probably be deemed paramount. But there will be great difficulty in reconciling with it any broad ruling that a railroad company must pay damages for indirectly depriving the landowner of the use of property which is not occupied by the road. A very nice distinction must be drawn, like this: that when buildings alongside the street are invaded by smoke, by sound-waves, and by those minute particles of matter which give rise to noxious smells, and are jarred by the concussion of trains, they are, in fact, occupied; intruded upon by the operations of the company, and so are taken. The general view in past years has unquestionably been that lands only indirectly affected by a neighboring railroad cannot claim compensation. For it has been considered that if each landowner in the vicinity might claim compensation for depreciation of his property, the company ought in justice to be allowed to reimburse itself by claiming contribution from the owners of property improved in value by the location of the road. The number and complexity of the claims which would thus be called into being would be intolerable.

Two contemporaneous decisions in other states on the same subject are noteworthy, though they relate to ordinary steam roads. In Illinois, several roads located together in a Chicago street were sued by the owners of a residence who complained that their tracks impeded his access to his house, and that the engines perpetually cast smoke, dust and cinders upon it. The Court said that actual injury to the land and building by nuisance, by jarring the building and casting cinders and smoke upon the premises was a reason for allowing damages. But there must be a physical injury; for general depreciation in value, such as inconvenience in coming and going, or noise and confusion in the vicinity, the householder has no claim. It is one of the risks of property whether it will be benefited or depreciated when a railroad is built near by. In Pennsylvania, a railroad was authorized in the town of Warren, and was located immediately in front of a costly and handsome dwelling-house which had just been completed. The house-owner sued for the inconvenience and annoyance caused by the passage of trains, by the cinders and smoke and the hindrance of access. The Court, however, would not allow a recovery for either of these; it said that a railroad company could not be sued for such consequential injuries caused by its road. The aggrieved householder offered to show that the companies might just as well have laid their tracks through another street; but the Court said that the question where to locate the track was entirely for the directors.

The responsibility for management of trains in use during construction is not always upon the company. In a Texas case the company had given out a section of the road to be built by contract. The contractors were running a train back and forth for their convenience in doing the work. Some person who wanted to travel that way bargained to be carried on this train. He was hurt on the way and sued the company. The Court said that he should have sued the contractors; that the company was not liable because it had not yet assumed the operation of the road. His counsel objected that the company could not delegate its franchise; but the Court said that this doctrine applies only to roads built and in operation; it does not forbid a company to allow contractors to run construction trains at their own risk while they are building the road.

The responsibility for the condition of the road while it is disused may be serious. It is well illustrated by a Kansas case. The road in question had been suspended for several years, owing to want of funds to complete it. Connected with it was a turntable, situated in open prairie, in a spot near a populous city where persons frequently passed, and children were in the habit of playing, yet it was not fastened, watched or guarded, or even fenced. An Irish boy, named Fitzsimmons, of about twelve years of age, who knew nothing about machinery, was sent one day to search for his father's cow. He found her near the turntable. Other boys of about the same age were present; they became engaged in play on or about the turntable, and young Fitzsimmons was severely injured. The court said that the company was negligent in leaving the turntable in the condition shown; and that the boy ought not to be considered particularly in fault or to be deprived of his damages because he was careless. At his premature age, with his limited knowledge and experience, and his lowly station in life, it was probably intense amusement, almost irresistible, for him to ride upon a turntable; and probably he did not imagine that he was a trespasser, or in the slightest danger. Boys can seldom be said to be negligent when they

merely follow the irresistible impulses of their own natures—instincts common to all boys. In many cases where men, or boys approaching manhood, would be held to be negligent, younger boys, and boys with less intelligence, would not be.

The German Railroad Union in 1878.

The German Railroad Union, including substantially all the roads in the Empire of Germany and that of Austria-Hungary and the Principality of Roumania, together with some Belgian and Dutch roads, publishes an annual report for the whole system of roads included in it. That for 1878 is just issued, and from it we obtain the facts which enable us to make the following statements and comparisons:

The mileage of the roads in the German Railroad Union at the end of 1878, was:

	Total.	Not open to public.	Open for passenger traffic.	Open for freight traffic.
German roads.....	19,580	138	19,195	19,506
Austro-Hungarian roads.....	11,183	150	10,983	11,182
Other roads.....	2,614	94	2,584	2,614
Total.....	33,370	312	32,712	33,355

The difference between the sums of the roads of the different countries and the totals is due to the fact that certain sections of road are used in common by the companies of two countries and included in the reports of both.

The average length in operation during the year was, in miles:

	Total.	Double track.
German.....	19,361	5,964
Austro-Hungarian.....	11,158	1,063
Other.....	2,585	351
Total.....	33,006	7,378

Thus only 22.3 per cent. of the road was double-tracked. Of the roads reporting to the New York State Engineer and Surveyor the same year the length of track (including sidings) was 48 per cent. more than the length of road.

There were also 23 miles of road with three tracks in the German Union.

The average capital per mile of road expended on these lines at the close of the year was:

Germany state railroads.....	\$101,580
Private roads operated by the state.....	113,627
Private roads operated by companies.....	98,530

Average of all German roads.....	\$101,953
Austro-Hungarian roads.....	113,520
Other Union roads.....	101,339

Average of all Union roads.....	\$106,395
---------------------------------	-----------

The aggregate capital invested in the Union roads was \$3,432,693,975. The increase during the year was nearly \$100,000,000.

The roads of highest and lowest cost per mile were:

Highest:	Lowest:
Berg & Mürk.....	\$172,470
Königlich.....	172,107
Empress Elizabeth.....	171,396
Main Line.....	171,396
Berlin, Potsdam & Magdeburg.....	167,400
Zittau & Reichenberg.....	159,405
Cologne & Minden.....	153,897
Arad & Körbthal.....	\$13,397
Dniester.....	14,672
West Holstein.....	17,544
Braunau & Stein-Iorf.....	18,233
Military Railroad.....	23,396
Angermünde & Schwedt.....	32,457

The average capital per mile in New York the same year was about \$89,000 per mile, or nearly 10 per cent. less than that of the German Union roads, and the latter was 42½ per cent. greater than the average capital for all the United States railroads, which, at the close of 1878 was \$58,916.

The German Union roads had in the aggregate the following locomotives:

	Number.	Av. No. per mile.
German roads.....	16,640	0.53
Austro-Hungarian.....	3,411	0.31
Other roads.....	907	0.37
Total.....	15,018	0.45

The average of the New York roads was 0.34 per mile.

On the average the performance of the German Union locomotives, that is, the number of miles run during the year, was:

	Revenue trains.	Revenue and other.
German.....	11,104	10,740
Austro-Hungarian.....	11,905	15,785
Others.....	14,673	20,308

Total in Union.....	11,956	16,750
---------------------	--------	--------

In New York the average locomotive performance was 21.350 miles of revenue trains, or 75 per cent. more than that of the German engines. There was an average of 5,325 trains over each mile of road in the German Union during the year, which is equal about to 7.3 trains each way daily over the whole Union system. In New York the train service was equivalent to 9.75 trains each way daily. The number of cars in the German Union was 28,897, and the number of passenger car axles was 64,413 (some of three and some of four axles, but most of them only two); and these cars had seats for 1,204,588 passengers, which is an average of 18½ per axle, 41.67 per car, and 36.8 per mile of road in operation. The average mileage made per passenger car was 19,534. Car mileage is not given in the New York report.

The percentage of seats occupied in the passenger cars while running was 23.97 per cent. for the whole Union, and has been almost the same for three years (23.70 in 1877 and 23.53 in 1878).

The Union roads at the end of 1878 had in the aggregate 318,579 freight cars, with 649,135 axles—nearly all being four-wheeled, but a few six or eight-wheeled cars; and the average number of freight cars per mile of road was 9.55. Of the whole number 119,398 were covered and 100,181 open cars—five-eighths open. The increase during the year was 6,766—which is no more than a single company added to its stock in this country that year. The average service of these freight cars was 9,040 miles run during the year, and 87,780 car-miles were run to each mile of road—equal to 140 freight cars hauled each way daily over the whole mileage every working day of the year. In New York the roads had

7.08 freight cars per mile of road, against 9.55 in the German Union.

The proportion of the capacity of the cars utilized while running was 41.6 per cent. on the German Union, which gives an average load of about 4.6 tons.

The average number of trains during the year over the whole mileage was :

	Passenger.	Freight and Mixed.
On German roads.....	3,049	2,987
On Austro-Hungarian roads.....	1,153	2,307
On other roads.....	2,775	2,344
On all Union roads.....	2,380	2,708
On New York roads.....	2,534	4,582

It seems strange here to see the mileage of passenger trains exceed that of freight trains, as it does on the German roads. The above train service on the whole system is equivalent to 3.27 passenger and 3.71 other trains each way daily 365 days in the year—not by any means a heavy traffic; and even in Germany it is equal to but 4.18 passenger trains and 4.09 freight trains each way daily.

The passenger traffic of the year was as follows, in passenger miles :

Germany	3,820,639,430
Austria-Hungary	1,224,136,650
Others	552,800,240

Total..... 5,597,576,320

This is about five and one-half times the passenger traffic of the New York roads, the mileage being only four times as great. More than one-sixth of the Austrian passenger movement was due to the transportation of troops for the occupation of Bosnia, etc.

The passenger mileage per mile of road was 201,368 in Germany, 111,816 in Austria-Hungary, 225,311 on the other Union roads, and on the whole mileage of the German Railroad Union it was 172,518, which is 1 per cent. less than in 1877, and is equivalent to 235 passengers carried each way daily (including Sundays) over the whole system, against 186 in New York. On one road (the Nuremberg & Fürth) this average was as much as 1,545 daily, the next being 908, and on others it was but 12.3, 13.7, 22.0, 24.7 and 34.2 respectively. On 27 roads it was less than 70 each way daily.

The tonnage mileage of freight and the number of ton-miles per mile of road were:

	Ton-miles.	Per mile.
Germany	7,780,259,125	403,173
Austria-Hungary	3,345,244,045	302,072
Others	528,076,670	320,053
Total Union..... 11,004,180,440	364,561	
New York..... 5,807,260,813	660,667	

For the whole German Union system this freight traffic is equivalent to 500 tons, on the New York roads to 917 tons carried each way daily. Compared with the previous year there is an increase on the German Union roads of 1.2 per cent. in the total freight traffic on the German roads, but a decrease of 2.74 per cent. in the traffic per mile of road.

The heaviest freight traffic is at the rate of 2,336 tons each way daily (on the upper Silesian road), the next 1,533 tons, on the Emperor Ferdinand Northern. The least freight traffic was at the rate of 12 tons, on the Crefeld Industry road. On 14 roads it was less than 50 tons each way daily. On the New York Central in 1879 the freight traffic was equivalent to 3,146 tons each way daily, or one-third more than on the German road with heaviest traffic.

The receipts of the whole system of the Union were as follows:

	Total.	Per mile.
Passengers.....	\$83,099,491	\$2,517
Freight.....	2,25,917,726	6,770
Other.....	7,182,837	215
Total..... \$317,113,054	\$9,502	
New York..... 89,449,434	10,777	

Three per cent. of the passenger traffic and 7 per cent. of the earnings were from first-class passengers, 19 per cent. of the traffic and 30 of the earnings from second-class, 51 per cent. of the traffic and 47 of the earnings from third-class, and 18 per cent. of the traffic and 11 of the earnings from fourth-class passengers. The average rates received were 8.43 cents per mile for the first class, 2.40 for the second class, 1.20 cents for the third class, 0.9 cent for the fourth class, and 0.736 cent for the soldiers and others carried at less than the regular rates.

The average receipt per ton per mile was 1.823 cents, being 1.657 on the German and 2.231 on the Austro-Hungarian roads. For the same year in the State of New York the average was almost exactly 1.0 cent.

The report gives a statement of the average receipts per ton per mile for each class of freight, which we have never seen given before for any roads. These rates average in cents:

Express freight.....	7.90	Service freight.....	0.70
Package freight.....	4.01	Equipages.....	2.08
Car-load freight.....	1.54	Live stock.....	3.57

What we have called "service freight" includes freight which the roads are required to carry at reduced rates, etc., the whole amount of which is trifling, being but about \$8 in \$1,000 of total freight receipts. "Equipages" include horses and carriages together, which are quite frequently carried in European countries—much more so than in this country. The receipts from these are a very small proportion of the whole, but amount in the aggregate to about \$1,000,000, or to \$30 per mile of road. No less than 70% per cent. of the freight earnings were from car-load freights, which are so much lower than for less quantities (which are here called "package" freight) that people who have small quantities to ship usually resort to a class of "forwarders," who make a business of collecting small quantities and uniting them into car-loads.

The average car-load rate is equivalent to 74 cents per 100 lbs. from New York to Chicago.

The average live-stock rate is equivalent to \$1.72 per 100 lbs. from Chicago to New York, or about three times the current rate. It must be remembered that the German hauls are very much shorter than this distance, and the rates for very short hauls are generally lower than ours.

Compared with the previous year there was a decrease in gross earnings of 1.86 per cent. on the German roads, of 3.12 per cent. on the Austro-Hungarian, and of 3.13 on the other roads.

The average earnings per mile of road were \$9,502, per train mile \$1.80, and per axle mile 4.4 cents. Of the total receipts 27 per cent. was from passengers, 71 per cent. from freight, and 2 per cent. from other sources. In New York the average earnings per train mile were \$1.50, and 26% per cent. of the total earnings were from passengers, 64% from freight, and 8% per cent. from other sources.

The average train-load on the German Union system was 42% passengers and 151 tons of freight—the latter a very large average load. Neither can be ascertained closely, on account of the vast mileage of mixed trains, which in the above calculations has been counted one-half as freight and one-half as passenger-train mileage. On the New York roads the average train load was 47% passengers and 151 tons of freight.

With regard to the train mileage, Americans will be struck by the enormous proportion of passenger trains on the German Union roads, which is 44 per cent. of the whole, though the passenger earnings were but 27 per cent. of the whole earnings, and part of them, of course, was made by the mixed trains, which were nearly 19 per cent. of the whole. Probably nowhere else in the world are so many mixed trains run. The freight-train mileage was but 37 per cent. of the whole, though 71 per cent. of the earnings were from freight. If we call half the mileage of mixed trains freight trains, as above, and half passenger trains, the earnings were \$1.04 per passenger-train mile, and \$2.80 per freight-train mile ; which makes extremely probable the complaint in Germany that passenger traffic does not pay, especially as the expenses amounted on the average to 96% cents per mile for all trains.

On the New York roads passenger trains were 35.6 per cent. of the whole, and made 26% per cent. of the earnings, besides those for mails and express, and the average earnings per freight-train mile were \$1.51.

The working expenses were 54 per cent. of the receipts in Germany, amounting to \$5,131 per mile, and leaving \$4,371 per mile of net earnings. (In New York, \$4,000 per mile.) Of the total working expenses, 8 per cent. was for general expenses, 31 for guarding and maintaining road, 33 for transportation and commercial service, and 28 per cent. for train and shop expenses. This is a new division of expenses, and is in accordance with the recommendations of the International Statistical Convention, to make possible comparisons with the railroad statistics of other countries.

The net earnings were equivalent to 4.29 per cent. on the cost of the roads; they were 4.42 per cent. on the German roads, 4.01 on the Austro-Hungarian lines, and 4.67 on the other roads in the Union. This percentage exceeded 7 per cent. on 11 roads, and exceeded 10 per cent. on four (11.51 on the Warsaw & Vienna, 13.95 on the Emperor Ferdinand Northern, 14.16 on the Newmark & Simbach, and 15.08 on the Upper Silesian); it was less than 2 per cent. on 47 roads, less than 1 on 27, and the expenses were greater than the receipts on 11 roads—two in Germany and nine in Austria-Hungary.

The average dividend actually paid on shares was 4.47 per cent. against 4.51 in 1877. The average paid in the United States last year was 2.49 per cent., and the average percentage of net earnings to total cost of road was 4.98 per cent., against 4.29 on the roads of the German Union. In New York the net earnings were 5.24 per cent. on the cost and the average dividends were 3.52 per cent. The dividends on stock here are reduced by the fact that the rate of interest on the bonds is on the average probably one-half higher than in Germany.

The accidents of the year are reported as follows:

	German Union.	United States.
Derailments.....	1,395	481
Collisions.....	525	220
Other.....	1,800	39
Total.....	3,710	740

These figures have next to no value for comparison, however, unless it is as indicating the comparative frequency of the different classes of accidents. The reports for this country include but a small portion of the slight accidents, while those from the German Union are probably approximately complete. The figures make the number of collisions equal to 37½ per cent. of the derailments in Germany and to 46 per cent. in this country.

The record of killed and injured by accidents includes, besides the victims of train accidents, which alone we report, also all killed on the tracks, etc. But we compare below the number of those reported killed or injured by railroad accidents without fault of their own (which may include some persons getting on or off the cars) with the victims of train accidents here, as follows:

	German Union.	United States.
Killed.....	82	204
Injured.....	557	756

Total..... 639 960

The mileage of road was about 2½ times as great in the United States, but the passenger traffic cannot have been nearly so much greater.

There were in the year in the German Union 58 accidents caused by broken axles, 96 by broken tires and 17 by broken rails. In the same year we reported 18 accidents by broken axles, none by broken tires (but five by broken

wheels), and 17 by broken rails in the United States. There were 111 reported here from broken rails in 1873. That rails break more frequently here than in Germany may be doubted, for the German Union reports that there were 2,571 cases of rails breaking in 1878, though but 17 of them caused accidents. The tracks are so closely watched there that unless the rail causes an accident at the moment it breaks it is not likely to do so at all. There were also in the German Union no fewer than 3,792 cases of broken tires, 2,816 of them on car wheels. These are almost entirely avoided here by the use of cast-iron wheels.

There were employed on the roads of the German Railroad Union at the end of 1878 422,378 men, 195,274 of which were counted as regularly appointed employés (whose positions are permanent) and 237,104 as day laborers. The average number per mile of road was 12.72—probably considerably more than twice as great and perhaps three times as great as the average in this country. The number was 13.85 on the German roads, 11.27 on the Austro-Hungarian, and 10.95 on the other roads. The New York Central & Hudson River road, which has a passenger traffic 70 per cent. greater and a freight traffic six times as great as the average of the German Union roads, about the same time had an average of 10.73 employés per mile of road.

The work performed per employé on this road and the average German Union road was:

	N. Y. Cen.	German Union.
Passenger miles.....	27,032	13,562
Ton miles.....	213,962	28,660

Thus one man on the New York Central effects just about twice as much passenger transportation and seven and a half times as much freight transportation as one man on the German Union roads! It is true that the New York Central's enormous traffic gives it a great advantage in this respect, as the number of employés does not have to be increased in proportion to the increase in traffic. On this account we compare a road with a comparatively thin traffic with the German Union roads :

	Chic. & N. W.	German Union.
Passenger miles.....	13,625	13,562
Ton miles.....	80,032	28,660

The Northwestern that year had less than one-third the passenger traffic and 12 per cent. less freight traffic per mile than the roads of the German Union, yet one of its employés effected the same amount of passenger transportation and 180 per cent. more freight traffic than the German Union employé. This probably more than anything else explains the cheapness with which American roads are worked when compared with German and other European roads on which wages and the prices of most materials are very much lower. It also indicates incidentally why the expense per unit of traffic decreases with the density of the traffic, when we find that on a road managed with the severe economy enforced on the Northwestern an employé effects but half as much passenger traffic and but three-eighths as much freight traffic as one on the New York Central.

Foreign Railroad Notes.

The Journal of the German Railroad Union says: "On the occasion of a debate which we have already mentioned, the impossibility of state railroad management in Russia was asserted on the ground that if the stockholders interested were excluded from the management there would be a possibility of ruinous contracts in favor of individuals, and, in illustration, the details were published of the famous contract of the American Winans, who died recently, with the government concerning the Nicholas Railroad. By the use of considerable money Winans succeeded in making a contract, to extend from July 1, 1868, for eight years, by which the government was to pay him for oiling cars and small car repairs at an agreed rate per passenger and per ton per mile. Besides he received a fixed sum of 104,000 roubles (\$78,000) per year for painting and maintaining the interior of the passenger cars, 33,000 roubles (\$28,500) for keeping up the shops, and finally 520,000 roubles (\$390,000) yearly for renewing what rolling stock might be worn out. In this way the cost of renewals alone run up to about \$1.10 per train mile, while this expense after dissolving the contract was but 53 cents. With an average of 5,000,000 train miles per year on the Nicholas road, the Great Russian Company, which, on the 1st of September, 1868, with the road had to take the Winans contract from the government also, was compelled to break this contract at any cost, and, after endless negotiations, in the year 1872, succeeded, by an arrangement by which the government paid Winans a penalty of \$3,750,000, which the Great Russian Company paid back with interest within four years. If the work under the contract had been continued it would have cost the company more than one-third of its net earnings, since the yearly saving amounts to nearly 3,500,000 roubles (\$2,625,000)."

Another contract which the government had made for the same road with a sleeping-car company was settled shortly afterward by the government's taking from the company the few cars it had on hand and paying \$375,000 for them and \$52,500 a year for the unexpired seven years of the contract.

This would indicate that there is a considerable class of enterprising gentlemen in this country whose proper field is Russia, to which country they are commended.

The reports to the Minister of Transportation of Russia for the year 1879 (which do not include the roads of the Province of Finland) show that there were 14,030 miles of railroad in operation in the Empire during that year, on which the average earnings per mile of road were \$11,125. There were opened during the year 870 miles of new road, 188 miles of which were in the Ural Mountains, on the

Asiatic border. The aggregate number of passengers carried in 1879 was 29,469,431, besides 3,777,649 soldiers, and the number of tons of freight carried was 13,507,000, beside 47,300 tons of express goods, or freight carried on passenger trains. The number of passengers carried on these 14,000 miles of road was about four times as great as the number carried on the 1,018 miles of the New York Central in 1879, and the number of tons of freight just one-half greater.

The Odessa Chamber of Commerce, in discussing the competition of American with Russian grain, lays great stress on the low rates on American railroads. But the rate given for Russian roads cannot be considered high. It is 1.7 cents per ton per mile, or at the rate of 7½ cents per 100 lbs. from Chicago to New York. But the Russian roads leading to Odessa are not like our roads between Chicago and New York, but are primary receivers of grain, more like the roads carrying from the West to Chicago or St. Louis. But the other charges in Russia are high, that for weighing, loading, etc., being given as 7½ cents per 100 lbs., besides a considerable injury by loss and damage on the route. The Odessa Chamber asks for more railroad competition and for the improvement of the three important ones emptying into the Black Sea, the Bug, the Dnieper and the Dniester.

The capacity of the Russian anthracite mines of the Donetz has been reported as 3,000,000 tons; but it is charged that the inability of the railroads to manage so much business has reduced the amount marketed about one-half. One of them carried 900,000 tons and the other 660,000 in 1879.

Russian freight receivers have complained that they were often charged with long storage for freight when they had received no notice of its arrival, the station agents insisting that such notice had been sent. A ministerial decree aims to relieve them from this trouble by instructing that any one expecting freight may at any time apply to the station where it is to arrive and in reply to his answer whether it is come, receive a dated memorandum inscribed "arrived" or "not arrived," and then the station men cannot charge him storage until it has arrived!

The Russian government has laid a tax of about 2 cents per ton on all freight to raise money to provide store-houses and improved appliances for loading and unloading. As grain is frequently piled up out of doors for weeks at stations, waiting for a chance to be shipped, the store-houses seem to be needed.

A number of German railroads last summer introduced a new kind of family excursion tickets. They are round-trip tickets, good for 40 days, the journey in entire direction to be made without stop-over, and the peculiarity is in the reduction for numbers. Thus, a single round-trip ticket between Berlin and Gotha being 26.90 marks for the second-class and 17.90 for the third, for a party ticketed and traveling together the prices for each are :

SECOND CLASS.		THIRD CLASS.	
No. of party.	Rate for each party.	No. of Marks.	Rate for each party.
4 or 5	21.50	5 or 6	14.30
6 or 7	20.20	7 to 9	13.40
8 or more	18.80	10 or more	12.50

Thus the family or party of 10 persons going third-class would pay but 125 marks instead of the regular round-trip rate of 179 marks for their journey—a saving of no less than 30 per cent., and on a party of 8 second-class passengers the proportion of saving would be very nearly as great. In this country such tickets would probably be utilized most by families going from the cities to board in the country in summer. The making up of parties not families or friends to get the benefit of the reduction is made difficult by the fact that they must all return as well as go together.

Among the Germans who had experience with our baggage-checking system in 1876 was Dr. Wedding, an eminent mining engineer. A few months ago he proposed in the Berlin Railroad Science Society to appoint a committee to see if the system, or something like it, could not be introduced into Germany. Such a committee was appointed, among whose members were Dr. Wedding and Mr. Bartels, who is also familiar with our roads. This committee reported that the "railroad operating regulations" would have to be changed by the Federal Council before the system could be introduced, and it did not recommend its introduction just as it is here, but, in the first place, made it alternative with the present German system, proposed a uniform charge of 12 cents for each piece of baggage carried for any distance whatever, with great limitation of liability in case of loss, and a somewhat different check; but as it was not certain that the roads would not lose money by giving up the old system, under which they have considerable receipts for extra baggage, the society proposed that further statistical investigation be made before anything is done. The charges in Germany for receipts over 55 lbs. are now very high for long distances—about as much as the fare if the quantity is considerable; and with the complaint general that passenger traffic hardly pays expenses, it is felt that the railroads cannot give up what they earn from extra baggage. Why they cannot keep the limit at 55 lbs. and still check the baggage, whether free or extra, does not appear clear.

In Germany, when a passenger presents baggage to be carried, it is first of all weighed (55 lbs. is allowed free), and then begins work on a baggage manifest which is divided into four parts. One of these is a stub, left in the baggage receipt-book at the station; the second goes to the baggage man in the car, and serves as his bill of lading; the third is handed to the passenger, and the fourth, which, besides the names of the points of shipment and destination, has the numbers that are on the other sections, is pasted upon the baggage. On the first and third sections are written the

declared value of the baggage and the freight that has been paid on it.

In Holland in 1879 the leading railroad company worked 637 miles of road, and got an average service of 20,515 miles run out of its locomotives, of which 16,700 miles was on revenue trains.

The *Journal of the German Railroad Union* is publishing a translation of the first 85 pages of the report of the Special Committee on Railroads of the New York Assembly—including the complaints of the Chamber of Commerce and the joint reply of the Erie and New York Central companies. The translation is introduced as follows: "For German readers these proceedings have a special interest in so far as they show that railroad business everywhere gives rise to the same complaints, and that those complaining are everywhere inclined either to go too far, or to look in the wrong place for the occasion of the evil complained of."

Dr. Engel, the Chief of the German Bureau of Statistics and one of the first of living statisticians, has recently published a volume entitled "The Age of Steam," in which he gives the completest information ever collected as to the extent to which steam is used and results effected by it. In the course of it he gives the average rates of transportation before the days of railroads as about 9½ cents per ton per mile, and 2.08 cents per passenger per mile. Reckoning on this basis, the cost of the freight carried by rail in Prussia from 1844 to 1878 was about \$4,640,000,000 less than if it had been carried by the old methods (had that been possible), and it is estimated that the time saved by passengers was worth \$238,000,000 more, reckoning the value of the time at only 2½ cents an hour. The saving of fares to passengers amounted to about \$200,000,000 more, and so the whole saving was \$5,078,000,000, of which \$475,000,000 was in the single year 1878.

Both *Engineering and the French Revue Industrielle* have published an engraving of the locomotive dumper of Mr. A. E. Buchanan which we described and illustrated recently.

The Manager of the Western Railroad of France, Mr. Deslessert, has had some passenger cars made in which the seats and the floor on which the passengers' feet rest while sitting are combined in a frame which is suspended on springs, which, as we understand, take the place of part of the usual springs under the car. The spring is half of a semi-elliptic, and is placed directly under the seat. The result is said to have been satisfactory.

On the 1st of May last the Northern Railroad of France had 131 locomotives and 550 cars fitted with the improved Smith vacuum brake, equipping 22 daily trains, including the express trains from Paris to Calais, Boulogne, Lille and Soissons. By the close of this year it is expected to have 378 engines and 800 cars equipped. It announces that soon it purposes to put this vacuum brake on the engine, tender and front car (a special brake car) of freight trains. The company has had a double pipe put on, to make it quicker to act, and the report to the French Minister of Public Works on accident prevention says that now it only takes five seconds to exhaust the air from one end to the other of a train of 24 cars, and in case of a leak at any point in the double line, the brake will still work. This report says that the Paris, Lyons & Mediterranean road, which has been experimenting with both the Smith and the Westinghouse brake, finds that the Smith brake gives stops within 1,000 ft. from a speed of 40 to 42 miles an hour on grades of 21 to 26 ft. per mile, and the Westinghouse brake a little shorter stops under the same circumstances. The company has not yet decided for either; but looks for a brake which shall have the simplicity of the Smith and the automaticity of the Westinghouse. It says that the Southern Company seems to have given the preference to the Westinghouse system, and is now fitting that brake to new rolling stock for fast trains about to be put on between Bordeaux and Cet, and between Narbonne and the Spanish frontier.

The whole number of furnaces in Great Britain and the number in blast at four different dates within the past year are reported as follows in Ryland's *Iron Trade Circular*.

	Nov. 13.	March 31.	June 30.	Sept. 30.
	1879.	1880.	1880.	1880.
Whole number built..	497	950	947	955
Number in blast....	457	597	559	554

Thus, though there is a decrease of 7 per cent. in the number in blast since March, there is an increase of no less than 20 per cent. since November.

Record of New Railroad Construction.

This number of the *Railroad Gazette* contains information of the laying of track on new railroads as follows:

St. Louis & San Francisco.—Track laid on the Arkansas Branch from near Pierce City, Mo., southward to Washburn, 25 miles.

Atchison, Topeka & Santa Fe.—Track has been laid on the Manhattan, Alma & Burlingame Branch from Burlingame, Kan., northwest to Manhattan, 59 miles.

International & Great Northern.—Extended from San Marcos, Tex., southwest to York Creek, 8 miles.

Danville, Olney & Ohio River.—Extended from the Embarrass River to West Liberty, Ill., 13 miles. Gauge 3 feet.

Walton.—Track laid from Social Circle, Ga., towards Walton, 8 miles. Gauge 5 feet.

This is a total of 113 miles of new railroad, making 4,388 miles thus far this year, against 2,739 miles reported at the same time in 1879, 1,635 miles in 1878, 1,668 miles in 1877, 1,875 miles in 1876, 986 miles in 1875, 1,363 miles in 1874, 3,075 miles in 1873, and 5,709 miles in 1872.

THE CHICAGO SOUTHWESTERN PASSENGER WAR came to an end last Friday as suddenly as it began, and is succeeded

by a combination which extends to the passenger business of the roads, and is similar to the combination of the Southwestern Association over the freight traffic of the same roads, and includes a modification of the freight apportionment of that Association. The conference of the representatives of the companies in New York last week is said to have been a somewhat warm one. It was regarded as significant that Mr. Jay Gould represented in this conference not only the Missouri Pacific, of which he is President, but also the Wabash, St. Louis & Pacific, of which he is not an officer (but a member of the Executive Committee of its board of directors) and which he has not appeared to be actively interested in for some time past, its President, Mr. Solon Humphreys, or its Vice-President, Mr. A. L. Hopkins, usually appearing as its executives. Moreover, Mr. Gould is said to have been very decided in asserting the claims of the Wabash, and he really seems to have been pretty successful in getting them allowed. We understand that the division of passenger earnings is to be made equally among the several roads, Toledo passengers being counted to the Wabash the same as Chicago passengers, and that the arrangement goes back to cover the whole time of the war. Tickets are to be good over either road in the Association, and this will make the unlimited tickets issued by the Wabash between Chicago and St. Louis and by the Chicago & Alton between St. Louis and Kansas City a burden on all the companies alike; that is, the expenses of the war will be borne equally by the parties to it. By this arrangement it becomes a matter of indifference to the Wabash, so far as passenger business is concerned, when it gets to its permanent and central station in Chicago, or whether it gets any of the traffic there, except as it may affect a claim for a reapportionment of the passenger traffic, which may be claimed by any party to the agreement after six months, as with the freight traffic in the Southwestern Association. Of this latter the Wabash is to be assigned a percentage to and from Chicago by arbitration to be made by Nov. 15 and applying to the traffic as far back as Oct. 1, and that company may demand a new award as soon as it reaches its final Chicago terminus, without waiting for the six months which must, as a rule, elapse, before any apportionment can be changed. The passenger traffic as well as the freight traffic will be attended to for the present by Commissioner Midgley, of the Southwestern Association, though this may not be a permanent arrangement.

Thus, after less than two weeks' war, an alliance is concluded which differs from the old one not only by providing for the Wabash at Chicago, but also by including the passenger as well as the freight traffic. The Southwestern Association in this now resembles the Chicago-Omaha pool, and it is thought probable that in time they will be consolidated. When the Wabash completes its Chicago-Omaha line and the Atchison, Topeka & Santa Fe makes its junction with the Southern Pacific, the common interests of the two groups of roads will be greatly increased.

PENNSYLVANIA RAILROAD EARNINGS, like the New York Central's, show a lower rate of increase in September than for many months previous, it being but 9.3 per cent. against 24.8 in August and 23.5 in July. There has been but one other month this year (February) that the increase has been less than 20 per cent., and for the nine months ending with September it has been 23.4 per cent. This decrease in the rate of increase is chiefly due to the fact that September earnings were exceptionally large last year; but, as in the case of the New York Central again, this year September earnings were a little less than August earnings, which has happened but once before (in 1878, when the August grain movement was the largest ever known) for at least five years. But, with the exception of August, the earnings in September are the largest of the year, and they are larger than in any previous month since 1876, when they were swelled by the Centennial travel, and then were exceeded only in September and October. For four years the earnings for September and for the nine months have been:

	1880.	1879.	1878.	1877.
September.....	\$3,047,544	\$3,336,519	\$2,838,646	\$3,006,408
Nine months.....	30,254,615	34,516,211	22,810,918	22,004,258

Thus the earnings for the nine months were not only 23.4 per cent. more than last year, but 32.6 per cent. more than in 1878, and 37.5 more than in 1877.

The September report this year is distinguished by a very large increase (24½ per cent.) in the expenses, the increase for the previous eight months having been less than 20 per cent. This great increase is doubtless due to charging to expenses expenditures which were for permanent improvements or for renewals properly chargeable to the business of previous years. These large expenses brought the net earnings in September below those of last year; the net earnings of the nine months, however, are 28.2 per cent. greater than last year, and this addition is equivalent to 4 per cent. on the stock, while the gain on the Western leased lines amounts to half as much more.

FREIGHT RATES IN FRANCE are the subject of a very interesting essay by a French engineer, a translation of which we publish elsewhere. The restrictions to which the companies are subject in making their rates seem intolerable, and must very greatly limit their ability to develop traffic; and yet the French public complains that the state has no efficient control, and seriously proposes to have the state acquire the roads. Apparently in every country on earth where there are railroads, whatever the system, from the most unrestricted independence of the companies through all degrees of state supervision to the pure state system, there are the same complaints of excessive and un-

equal rates. No degree of government control prevents this, but it does seem to prevent the development of cheap transportation that follows where the railroads have something like freedom of action. We cite what M. Lével gives as evidence of rapid progress in France, and compare it with experience in this country.

In 1878 the freight traffic of the whole French railroad system was equivalent to 5,500,000,000 tons carried one mile, on which the average rate received was 1.895 cents.

In 1855 the traffic was a little more than 1,000,000,000 ton-miles and the average rate 2.260 cents. In New York in 1878 the traffic was 5,800,000,000 ton-miles and the average rate 0.909 cent. In 1855 the traffic was 351,000,000 ton-miles and the average rate 4.81 cents.

In France traffic increased 450 per cent. and the rate decreased 25 per cent. in the 23 years; in New York the traffic increased 1,557 per cent. and the rate decreased 77 per cent., and reached a point 40 per cent. below the French rate.

WATER RATES have changed as follows during the week ending with Wednesday. Lake rates have declined. Quoted at 7½ cents a bushel for corn and 8 for wheat from Chicago to Buffalo on Thursday of last week, they fell off at one time a cent, and on Wednesday of this week are reported at 6½ to 7 cents for corn and half a cent more for wheat. Canal rates advanced a quarter of a cent after Wednesday of last week, and till Sunday remained at 6½ cents for corn and 6½ for wheat from Buffalo to New York. On Monday the rate further advanced ½ cent, and Wednesday the quotations were 7½ cents for corn and 8 for wheat, which are only a cent less than the rail rates. Wednesday's quotations make the cost of sending a bushel of wheat from Chicago to New York by water 16½ cents, against 18 cents by rail, and for corn 15½ to 15½ by water, against 16.8 by rail. Last year at this time the cost by water was about 3 cents higher, and the rail rate per 100 lbs was 5 cents higher. Lake rates were about the same as now at this time last year, but canal rates were 40 per cent. higher.

Ocean rates have varied very little during the week, grain by steamer to Liverpool having been quoted at 6d. per bushel every day.

THE WABASH-BURLINGTON CONTEST, regarding the construction of lines in Southwestern Iowa, was settled last week on the basis indicated in our last number. The Wabash is to extend its Missouri, Iowa & Nebraska road to Shenandoah, so as to complete a direct line from Keokuk to Council Bluffs, but not beyond Shenandoah, and for the 100 miles or so from Huston to Shenandoah there is to be but one road, which is to be owned in common by the two companies—precisely what we suggested in discussing the subject a month or so ago. This gives the Wabash its line with the least possible building of road and division of the local traffic and competition for that traffic, and so saves money to both companies. The Wabash is said to agree not to extend its Missouri, Iowa & Nebraska road to Nebraska for five years.

NEW YORK CENTRAL FREIGHT EARNINGS were not only smaller in September than the previous month (the total earnings being larger in September than in any other month of the fiscal year except August), but they were smaller than in any other month of the fiscal year except February and May—a great contrast with the previous year, when they were largest in September. They were 9.8 per cent. less than in August and 6.6 per cent. less than in July, when freight earnings are ordinarily quite light. The passenger traffic, on the other hand, was much larger in September than in any other month of the year, and 12.6 per cent. larger than in August, which stands next to it, and 18 per cent. greater than the largest monthly passenger earnings in the previous year, which were in October.

CHICAGO-NEW YORK PASSENGER RATES, and doubtless all passenger rates between Chicago and Eastern competing points, continue badly demoralized, and when passengers pay full rates for tickets it is usually because they do not try to get them cheaper. There is no open war, but if there was any prospect that one would result as the Chicago-Southeastern passenger war did last week, a million dollars or so might be made within a year by reducing the rate between New York and Chicago to a dollar to-morrow. Apparently no steps will be taken to mend matters until ruin threatens, and the worse things are the better the chance for reform.

General Railroad News.

MEETINGS AND ANNOUNCEMENTS.

Meetings.

Meetings will be held as follows:

Boston & New York Air Line, special meeting, in Middle-town, Conn., Nov. 4, at 1 p. m., to vote on the question of authorizing a new mortgage and the issue of \$500,000 new bonds to retire the existing issue of the same amount.

New York, Lake Erie & Western, annual meeting, at the office in New York, Nov. 30, at noon. Transfer books close Oct. 30.

Dividends.

Dividends have been declared as follows:

Boston & Providence, 4 per cent., semi-annual, payable Nov. 1.

Boston & Maine, 4 per cent., semi-annual, payable Nov. 15.

Atchison, Topeka & Santa Fe, 2 per cent., quarterly, payable Nov. 15.

Curt Trust of Pennsylvania, 1½ per cent., quarterly, payable Nov. 1.

Railway Equipment Trust of Pennsylvania, 2 per cent., quarterly, payable Nov. 1.

Concord, 5 per cent., semi-annual, payable Nov. 1.

Manchester & Lawrence, 5 per cent., semi-annual, payable Nov. 1.

Foreclosure Sales.

The **St. Louis & Southeastern** road will be sold in Springfield, Ill., Nov. 16, by Special Commissioners I. A. Jones and W. P. Fishback, under the decree of foreclosure granted by the United States Circuit Court. The sale will include the line from East St. Louis to Evansville, with the O'Fallon and Belleville branches, 208 miles in all, with all equipment and appurtenances. The terms of sale are \$150,000 cash at the time of sale, the balance to be paid when the court may direct, either in cash or bonds of the foreclosed mortgages. Arrangements have been made for the purchase and reorganization in the interest of the Louisville & Nashville Company.

American Society of Mechanical Engineers.

The following circular was issued by the Treasurer and Acting Secretary, Mr. L. B. Moore, on Oct. 27:

"In consequence of the growing indications of a large attendance at the approaching annual meeting, it has been thought best to secure greater facilities than are afforded by either of the places heretofore contemplated or announced. The Committee have, therefore, hired the Union League Theatre, Twenty-sixth street, between Madison and Fourth avenues, New York City, for the purpose of holding the first annual meeting of the Society. The auditorium is about 40 by 45 feet in size; seats 400 people, and is well lighted, warmed and ventilated. The session will begin at 2 p. m., Thursday, Nov. 4, 1880."

Order of Railway Conductors.

The thirteenth annual meeting of this Association was held in St. Louis, Oct. 19, with a large attendance of delegates. Grand Chief Conductor John B. Morford presided. The order was reported in a prosperous condition, with increasing membership. The usual routine business was transacted, but full reports of the meeting have failed to reach us.

National Association of Railroad & Omnibus Transfer Lines.

The first semi-annual meeting of this Association was held in Cincinnati, Oct. 19. The object of the organization is to establish a system of transferring baggage, checking, etc., as nearly uniform as the wants of the different localities will permit, bringing about a better recognition of the lines by the traveling public and railway companies who do business with them, establish a schedule of theatrical and other rates, adopt plans for better protection against the absconding debtors, and enter into agreements that will afford mutual protection and aid in prosecuting the business of transferring passengers and baggage. A committee was appointed to represent the Association in the National Association of General Passenger Agents at their semi-annual meeting at St. Louis in March next, to present to that body plans for the better protection of omnibus lines in the matter of travel coupons attached to railroad tickets and sold by railway ticket agents. It is claimed by the transfer lines that, under the present system, they are subject to great loss, because they have no means of collecting the coupons which are on their vouchers except from the passengers, and that a large percentage is lost on account of passengers often preferring to walk to and from the points of transfer, leaving their baggage for the transfer companies to haul, but retaining the coupons through carelessness or thoughtlessness. The next meeting will be held at Indianapolis on the third Tuesday in April, 1881.

ELECTIONS AND APPOINTMENTS.

Boston & Albany.—Assistant Superintendent Walter Barnes is appointed Acting Superintendent during the absence of Superintendent Russell on account of ill health. Mr. W. H. Russell, Jr., is appointed Division Superintendent in charge of the line from Pittsfield to Albany, with office at Albany, N. Y. Mr. J. B. Chapin has been appointed Acting Assistant Superintendent of the same division. Mr. Charles E. Grover has been appointed Division Superintendent in charge of the line from Worcester to Pittsfield, with office in Springfield, Mass.

Boston, Revere Beach & Lynn.—At the annual meeting last week the following directors were chosen: John B. Alley, Amos F. Breed, T. B. Dix, N. Gibson, A. B. Martin, Charles W. Slack, David H. Sweetser, Edward Tyler, Edwin Walden, David L. Webster, John G. Webster. The board re-elected Edwin Walden President.

Boston, Wethrop & Point Shirley.—At the annual meeting, Oct. 26, the following directors were chosen: L. G. Irwin, Wethrop, Mass.; C. A. Parks, Wakefield, Mass.; F. H. Hills, Newton, Mass.; Francis French, S. W. Hale, Keene, N. H.

Bradford, Bordent & Kinzua.—Mr. John A. Reed has been appointed Auditor. He was formerly on the Buffalo & Southwestern road.

Butler & Detroit.—The directors of this company, which is to build the section of the Detroit, Butler & St. Louis road in Ohio and Indiana, are: R. A. Alger, G. W. Bales, C. H. Buhl, R. W. Gillett, James F. Joy, James McMillan, Allen Sheldon. Mr. James F. Joy is President.

Chicago, Burlington & Quincy.—Mr. Thomas J. Potter, late Assistant General Manager, has been appointed General Manager of all the company's lines east of the Missouri River. His office will be in Chicago. The appointment takes effect Nov. 1 next. Mr. W. H. Firth is appointed General Western Passenger Agent of this company, in charge of the territory from Cheyenne to Buffalo and Pittsburgh, with headquarters in Chicago. The appointment dates from Nov. 1.

Chicago & Eastern Illinois.—At the annual meeting in Chicago, Oct. 19, the following directors (one-third of the board) were chosen for three years: E. F. Leonard, Springfield, Ill.; Joseph G. English, Danville, Ill.; John N. Brookman, New York. All are re-elected. The board re-elected F. W. Huidekoper, President; A. S. Dunham, Secretary and General Passenger Agent; J. C. Calhoun, Treasurer; Henry Crawford, General Solicitor; O. S. Lyford, Superintendent; Robert Forsyth, General Freight Agent; Allen Cooke, Master Mechanic.

Chicago, Milwaukee & St. Paul.—Mr. W. G. Swan is appointed Superintendent of Freight Traffic, a new office, and will have especial charge of the through freight traffic of the company. Mr. George Olds succeeds Mr. Swan as General Freight Agent, and will have charge of the local freight business. Offices in Milwaukee.

Chicago, Rock Island & Pacific.—Mr. M. Temple has been appointed Ticket Auditor. Mr. S. F. Boyd, formerly of the Indianapolis, Decatur & Springfield road, succeeds Mr. Temple as Chief Clerk of the Ticket Department.

Danville, Olney & Ohio River.—At the annual meeting in Kansas, Ill., recently, the following officers were chosen:

President, Parker C. Chandler; Vice-President and General Manager, Charles Howard.

Detroit & Pelican Valley.—The officers of this company are: President, G. W. P. Bowman; Directors, Francis C. Choate, George H. Johnson, Frank LaCrosse, W. W. Rossman, S. H. Sutherland, H. N. Wilcox; Secretary and Treasurer, L. S. Warner. Office at Detroit, Becker County, Minnesota.

Evansville, Cincinnati, Dayton & Eastern.—The directors of this new company are: John N. Hayward, Henry Earle, Nathan D. Putnam, Thomas J. Brady, E. C. Humbert, M. A. Bryson, A. W. Platt, Samuel Vickery, J. A. Denke, S. P. Gillett, J. J. Kleiner, J. Condit Smith.

Evansville & Terre Haute.—At the annual meeting in Evansville, Ind., Oct. 19, the following directors were chosen: Samuel Bayard, C. R. Benten, Josephus Collett, W. Heilman, F. Hopkins, W. R. McKeen, D. J. Mackey, J. E. Martin, D. W. Minshall, Samuel Orr, H. M. Sweetser, H. E. Turner, L. L. Watson. The board re-elected John E. Martin, President and Superintendent; Frederick Heakes, Secretary and Treasurer.

Galveston, Houston & Henderson.—Mr. C. L. Leslie has been appointed Assistant General Manager. He was formerly on the Kansas Pacific.

Indianapolis, Decatur & Springfield.—Mr. M. R. Spellman is appointed Master of Transportation, and will have full charge of the distribution of cars.

Jeffersonville, Madison & Indianapolis.—Mr. E. W. Cartwright has been appointed Northwestern Passenger Agent, with office in Chicago.

Kentucky Central.—Mr. C. A. Haslett has been appointed General Traveling Passenger Agent of this company, in place of Mr. George E. Coleman, resigned. Appointment to take effect from Oct. 20.

Lake Erie & Western.—At the annual meeting, recently, the following officers were re-elected: C. R. Cummings, President; J. H. Cheney, Vice-President; C. S. Brice, Attorney.

Nashville & Decatur.—At the annual meeting in Nashville, Tenn., Oct. 20, the following directors were chosen: J. W. Sloss, W. M. Duncan, John Orr, John F. Wheless, A. H. Lusk, Byrd Douglass, John Ramage, D. B. Cliffe, J. W. Baugh, John Frierson, Lucas Frierson, T. M. Jones, S. E. Rose, J. T. Tanner, George Mason. The road is leased to the Louisville & Nashville.

New Orleans, Mobile & Texas.—At a meeting held in New York, Oct. 22, the board elected C. C. Baldwin, George C. Clark, E. H. Green and H. Victor Newcomb directors, to fill vacancies made by resignation. The board then elected George C. Clark President. The road is leased to the Louisville & Nashville.

New York & Manhattan Beach.—The following officers were elected at the annual meeting this week: President, Austin Corbin; Vice President, J. B. Upham; Secretary and Treasurer, G. G. Moulton.

Ohio & Mississippi.—The board has elected Wm. F. Clintick, President; W. M. W. Iton, Secretary; E. K. Pinnett, Assistant Secretary.

Ohio Central.—Mr. Hudson Fitch has been appointed General Freight and Tick Agent for this company. All correspondence pertaining to these departments should be addressed to him. Office at Columbus, Ohio.

Shenandoah Valley.—Mr. Charles P. Hatch is appointed General Freight and Passenger Agent, vice Mr. G. H. Dugdale, resigned. Address, Hagerstown, Washington County, Maryland.

Southeastern, of Canada.—Mr. T. A. McKinnon has been appointed Assistant Manager. He was recently superintendent of the Canada Central Railway.

Tehuantepec.—At the annual meeting in Pittsfield, Mass., Oct. 20, the following directors were chosen: Edward Learned, Pittsfield, Mass.; Ozias Bailey, T. J. Buckley, Myron P. Bush, George S. Cope, Cortland P. Dixon, Hayden H. Hall, W. P. Learned, John A. Marvin, New York; Manuel Gamboa, Francisco de Herrando, of Mexico.

Vermont & Canada.—At the annual meeting in Bellows Falls, Vt., Oct. 21, the following directors were chosen: Francis A. Brooks, Charles E. Billings, John N. Bryant, Thomas F. Clary, James W. Johnson, Francis V. Parker, Boston; Wm. H. Webb, Philadelphia.

Wabash, Corning & Council Bluffs.—The officers of this new company are: President, G. W. Frank; Vice-President, A. B. Turner; Secretary and Treasurer, W. M. Crowley. Office at Corning, Iowa.

Western Maryland.—At the annual meeting in Baltimore, Oct. 20, the following directors were chosen by the stockholders: Joshua Biggs, Frederick County, Md.; J. K. Longwell, Carroll County, Md.; George W. Harris, C. W. Humrichouse, Washington County, Md.; Edward Worthington, Baltimore County, Md.

The Baltimore City Council has chosen the following city directors of the company: Samuel H. Adams, Christian Devries, D. J. Foley, G. M. Gill, E. G. Hipsey, N. G. Penniman, J. Alexander Preston, Alexander Rieman.

Wisconsin Central.—Mr. Gavin Campbell, heretofore Superintendent and Master Mechanic, will hereafter be Superintendent only. Mr. A. Fenwick has been appointed Master Mechanic, with office at Stevens Point, Wisconsin.

PERSONAL.

—Mr. Wm. Dowd, President of the Hannibal & St. Joseph Company, is the Republican candidate for Mayor of New York.

—Mr. C. O. Russell, General Superintendent of the Boston & Albany road, has been granted leave of absence for four months on account of ill health.

—Gen. J. S. Robinson, Railroad Commissioner of Ohio, was chosen a member of Congress at the recent election in Ohio, and will, it is expected, resign his office as Commissioner.

—Mr. J. H. Mountain, Chicago Ticket Agent of the Chicago, Rock Island & Pacific road, has resigned to take charge of the interests of the Colorado Mining, Smelting & Improvement Company.

—Mr. Francis B. Hayes is the Republican candidate for Congress from the Fourth Massachusetts District. He is a director of the Old Colony, the St. Louis & San Francisco and other companies, and is well known as a large holder of railroad securities.

—Mr. T. A. McKinnon, who recently resigned the position of Superintendent of the Canada Central Railway, was entertained at a banquet given in his honor by the citizens of Brockville, Ont., on the evening of Oct. 18. In the course of the evening Mr. McKinnon was presented with a valuable

silver set and a very complimentary testimonial by the employees of the road.

—Mr. T. D. Maurer, long Auditor of the Texas & Pacific road, was presented with a valuable gold watch and chain by the general officers of the road, on the occasion of his retirement from that office. The presentation took place at Marshall, Tex., Oct. 11, when number of the officers were present, and general regret was expressed at parting. Mr. Maurer is now in Philadelphia.

—Mr. Charles L. Frost died in New York Oct. 26, aged 66 years. He was born in Portsmouth, N. H., and made his first entry into business in New Orleans, but for 30 years past had lived in New York. He was one of the builders of the Toledo, Peoria & Warsaw, and was connected with that and many other roads, chiefly in the West, as stockholder, director or trustee. He took an active part during the past few years in the reorganization of several of the minor Illinois roads, and dealt extensively in stocks and bonds.

—Mr. John Duff died suddenly Oct. 26, at the residence of his son, John R. Duff, in Jamaica Plain, Mass., aged 70 years. He was born in Roxbury, Mass., and began work as a small contractor on the Boston & Providence road. Gradually enlarging his business, he finally became one of the most prominent railroad contractors in the country and was widely known for the extent and boldness of his operations. He built a large part of the Hannibal & St. Joseph, and many other western roads, and was one of the chief contractors on the Union Pacific. He was noted for his energy and for his quickness and correctness in estimating work. He was almost uniformly successful in his operations, and leaves a large fortune to his family.

—The Baltimore *Gazette* of Oct. 23 says: "It was learned yesterday that Mr. John W. Davis, General Agent of the Northern Central Railway Company, has decided to resign his position in that corporation and re-enter the service of the Baltimore & Ohio Company. It will be recollect that Mr. Davis held an important post a few years ago in the Baltimore & Ohio, with the interests of which corporation he was prominently identified, and during which period he thoroughly familiarized himself with its business and organization. The duties of his new field of operations will be of a more active and extended character than that of the position of General Agent, and his thorough familiarity with the interests of the Baltimore & Ohio Company, as already indicated, will enable him to discharge them with eminent success. Mr. Davis' withdrawal from the Northern Central Company is not the result of any disagreement as to its management, or with the officials of that road, with whom he has always held and will in the future maintain the most friendly relations, and his new position will doubtless go far toward promoting a more cordial relation between the two corporations. The ability, energy and thorough efficiency displayed by Mr. Davis in the position from which he is now withdrawing, and also in similar ones in the past, as well as his recognized probity in public trusts, are widely known."

TRAFFIC AND EARNINGS.

Railroad Earnings.

Earnings for various periods are reported as follows:

	1880.	1879.	Inc. or Dec.	P. c.
Atchison, Top. & S. Fe.	\$5,841,000	\$4,332,551	I. \$1,508,449	34.1
Chi. & West Mich.	603,361	462,274	I. 141,087	30.5
Cleve., Mt. Vernon & Del.	311,014	282,256	I. 28,758	10.2
Def., Lansing & No.	871,054	787,974	I. 83,080	10.6
Kan. City, Ft. Scott & Gulf.	814,187	612,735	I. 201,452	32.9
Kan. City, Law. & So.	530,763	341,173	I. 189,590	55.6
Marq., Houghton & Ont.	656,304	449,386	I. 206,978	46.1
Memphis, Pad. & No.	149,666	111,503	I. 38,163	39.2
Paducah & Elizabethtown	282,273	214,059	I. 68,214	31.9
Pennsylvania	30,254,615	24,516,211	I. 5,738,404	23.4
Net earnings	12,426,306	9,693,109	I. 2,733,197	28.2
Phila. & Reading	13,003,371	10,834,483	I. 2,258,888	20.8
<i>Eight months ending Aug. 31:</i>				
Atlanta & Charlotte Air Line.	\$525,887	\$433,893	I. \$91,994	21.2
<i>Month of August:</i>				
At. & Charlotte Air Line	\$65,044	\$51,955	I. \$13,089	25.2
New York & New England	249,885	204,215	I. 45,670	22.4
<i>Month of September:</i>				
Cleve., Mt. Vernon & Del.	\$40,584	\$40,248	I. \$336	0.8
Kan. City, Ft. Scott & Gulf.	95,381	90,186	I. 5,195	5.8
Kan. City, Law. & So.	73,518	55,028	I. 18,490	33.6
Marq., Houghton & Ont.	116,184	78,165	I. 38,019	48.6
Mem. Pad. & No	10,361	10,986	I. 8,375	76.1
Pad & El'town	37,915	29,945	I. 7,970	26.7
Pennsylvania	3,647,544	3,336,529	I. 311,015	9.3
Net earnings	1,474,909	1,500,638	I. 115,729	7.3
Phila. & Reading	2,080,256	1,374,013	I. 715,243	52.1
Net earnings	933,170	373,318	I. 559,852	150.0
<i>Second week in October:</i>				
Chi. & Eastern	\$30,506	\$19,916	I. \$10,590	53.2
No. Pacific, Eastern Div.	66,000	70,253	D. 4,253	6.1
St. L., Iron Mt. & So.	175,900	172,910	I. 2,000	1.7
<i>Third week in October:</i>				
Denver & R. G.	\$111,795	\$31,762	I. \$80,033	251.7
<i>Week ending Oct. 15:</i>				
Great Western	\$120,335	\$112,872	I. \$7,463	6.6
<i>Week ending Oct. 16:</i>				
Grand Trunk	\$238,639	\$213,880	I. \$24,759	11.6

Grain Movement.

For the week ending Oct. 16, receipts and shipments of grain of all kinds at the eight reporting Northwestern markets and receipts at the seven Atlantic ports have been, in bushels, for the past eight years:

Northwestern Shipments.		P. c.		Atlantic Receipts.
Year.	Receipts.	Total.	By rail.	By rail.
1873	4,453,734	4,318,497	676,258	15.6
1874	3,765,827	2,204,531	370,884	16.8
1875	5,055,246	4,153,803	1,163,438	29.6
1876	5,352,303	4,474,484	1,800,837	40.4
1877	5,101,813	5,041,757	1,152,962	22.9
1878	5,083,770	5,060,208	1,486,915	29.4
1879	7,180,777	7,240,224	1,868,589	25.8
1880	9,274,351	7,416,234	2,132,599	28.7

Compared with the corresponding week of last year there is this year an increase of 29 per cent. in the receipts and of 2.4 per cent. in the shipments of Northwestern markets, and a decrease of 26 per cent. in the Atlantic receipts.

Compared with previous weeks, the Northwestern receipts are a little larger than in the previous week even, and are with one exception the largest on record. Previous to this

year there had been but one week (the third in August, 1878), in which these receipts had reached 9,000,000 bushels. They have exceeded that amount four weeks this year, and in every one of the last three weeks.

The Northwestern shipments are 11 per cent. larger than the previous week, with one exception the largest of the year, and with the same exception the largest ever made. The rail shipments have also fully recovered the recent depression, and have been exceeded but once since navigation opened.

The Atlantic receipts are 7½ per cent. more than the week before, and are the largest for six weeks. They are, however, smaller than in any week of the three summer months. Last year at this time the receipts at the seaboard were heaviest, but it is different now. Though receipts at Northern markets are much larger than last year, the Atlantic receipts so far are decidedly less, and grain must be accumulating largely in the elevators, from which it can be shipped by lake only four weeks longer, and canal shipments are not likely to be made on any considerable scale after the middle of November, so that an exceptionally large amount is likely to be left to be carried by rail.

Of the total Northwestern receipts of the last week this year Chicago had 48.3 per cent.; St. Louis, 12.3; Toledo, 11.7; Milwaukee, 8.8; Peoria, 7.5; Detroit, 7.2; Duluth, 2.3, and Cleveland, 1.9 per cent. This week, for the first time for a long while, the wheat receipts are larger than the corn receipts. Chicago leads in wheat receipts, followed, in order, by Toledo, Detroit, St. Louis and Milwaukee. More than three-fourths of the corn was received at Chicago, and no other place had one-tenth as much.

The Atlantic receipts, New York had 48.6 per cent.; Philadelphia, 16; Baltimore, 13.4; Montreal, 7.5; New Orleans, 7.2; Boston, 7, and Portland, 0.3 per cent. In this the most notable change is a large increase at Philadelphia, which has not received so much in week before since July. Baltimore also has had larger receipts but once since August, and the indications are that the through rail movement has been stimulated by the advance in lake rates.

Atlantic exports for four consecutive weeks have been:

	Oct. 20.	Oct. 13.	Oct. 6.	Sept. 29.
Flour, bbls.	107,696	126,074	64,346	109,093
Grain, bush.	5,800,518	5,837,439	5,700,784	4,773,356

Receipts and shipments at Chicago and Milwaukee for the week ending Oct. 20 were:

	Receipts.	Shipments.
1880.	1879.	1880.
Chicago	4,583,672	3,600,061
Milwaukee	765,604	1,240,200

At Chicago there is an increase of 27½ per cent. in the receipts and 98½ per cent. in the shipments; at Milwaukee a decrease of 38 per cent. in the receipts and 55 per cent. in the shipments.

For the same week, ending Oct. 20, receipts and shipments at Buffalo were:

	Receipts.	Shipments.
1880.	1879.	1880.
By water	4,506,000	3,871,385
By rail	667,700	812,600

Total... 5,173,700 4,683,985 3,695,300 3,821,000

There is thus an increase of 18 per cent. in the lake receipts, a decrease of 18 per cent. in the rail receipts and an increase of 10½ per cent. in the total receipts; a decrease of 10½ per cent. in the canal shipments, an increase of 12 per cent. in the rail shipments, and a decrease of 3½ per cent. in the total shipments.

The Bureau of Statistics reports as follows the values of the breadstuffs exported in September and the nine months ending with September of the past two years:

	1880.	1879.	Inc. or Dec.	P. c.
September	\$35,153,787	\$42,404,016	D. \$7,250,229	17.1
Nine months	312,402,101	258,319,001	I. 54,083,100	28.7

This year only about one-ninth of the exports was in September, while last year nearly one-sixth of them was in that month.

Coal Movement.

Coal tonnages for the week ending Oct. 16 are reported as follows:

	1880.	1879.	Inc. or Dec.	P. c.
Anthracite	684,500	593,770	90,724	15.3
Semi-bituminous	75,809	60,443	9,368	14.1
Bituminous, Penna.	30,897	37,717	2,180	5.8
Coke, Pennsylvania	34,056	20,263	5,003	19.4

The anthracite market is stronger and prices are firmer than for some time past. An unusually large western demand is reported. In semi-bituminous and bituminous coal fair business is reported. Both Clearfield and Cumberland regions report a large output, which is well covered by orders.

The reported sales of coal from the Nova Scotia mines for the nine months ending Oct. 1 were: 1880, 704,691; 1879, 481,448; increase, 223,243 tons, or 46.4 per cent.

Petroleum.

Stowell's *Petroleum Reporter* gives the production of crude oil from the Pennsylvania oil regions in September as follows, in barrels of 42 gallons:

	1880.	1879.	Inc. or Dec.	P. c.
Production	2,055,030	1,856,700	I. 198,330	10.7
Shipments	1,252,633	1,627,120	D. 374,485	33.0
Stock Sept. 30	15,216,339	7,626,525	I. 7,595,814	99.7
No. of producing wells	13,825	11,760	I. 2,065	17.6

Of the shipments out of the regions, 410,727 barrels were to New York; 303,811 to Cleveland; 151,928 to Pittsburgh; 110,038 to Philadelphia; 58,889 to Boston; 53,916 to Baltimore; 7,500 to Ohio River refineries, and 155,826 to other local points. These shipments include all oil, refined being reduced to its equivalent in crude

needed facility; was purchased and improved, in the belief that they would receive the same measure of accommodation extended to others sustaining the same relation to defendant; defendant can receive and discharge stock at complainants' yard as easily and cheaply as it can at the Union Stock Yard Co.'s yards. Such delivery is both practicable and convenient, and it is, we think, its legal duty, under the facts of this case, to do so.

But defendant, protesting that the proposed discrimination in favor of the Union Stock Yard Co. would, if executed, constitute no wrong of which complainants ought justly to complain, contends, 1. That complainants, even supposing the law to be otherwise, have an adequate remedy at law, and therefore cannot have any relief from a court of chancery. And, 2. That if a chancery court may entertain jurisdiction, no relief in the nature of a mandatory order to compel defendant to continue accommodations to the complainant ought to be made till the final hearing. If such is the law it must be so administered. But we do not concur in this interpretation of the adjudicators. Those cited in argument are not, we think, applicable to the facts of this case. Complainants could, in the event defendant carries its threat into execution and withdraws the accommodations claimed as their right, sue at law and recover damages for the wrong to be thus inflicted. But they could not, through any process used by courts of law, compel defendant to specifically perform its legal duty in the premises. And this imperfect redress could only be attained through a multiplicity of suits to be prosecuted at great expense of money and labor; and when, after reaching the end through the harassing delay incident to such litigation, complainants' business would be destroyed and the Union Stock Yard Co., born of favoritism and fostered by an illegal and unjust discrimination, would be secure in its monopoly. Here an adequate remedy can be administered and a multiplicity of suits avoided.

One other point remains to be noticed, ought a momentary order to issue upon this preliminary application? Clearly not, unless the urgency of the case demands it, and the rights of the parties are free from reasonable doubt. The duty which complainants seek by this suit to enforce, is one imposed and defined by law, a duty of which the court has judicial knowledge. The injunction compelling its performance, pending this controversy, can do defendant no harm. Whereas a suspension of accumulations would work inevitable and irreparable mischief to complainants. The injunction prayed for will therefore be issued.

Condemnation of Property of a Railroad Company for Grade Crossing.

In the suit of the Union Pacific Co. against the Burlington & Missouri River Co. in Nebraska on the motion to dissolve temporary injunction against the crossing of plaintiff's tracks in Omaha by the other company, it was pleaded for the Union Pacific that, being built under authority of a Federal charter its property could not be condemned under the state law. The decision of the United States Circuit Court is summed up as follows:

1. The right of way of the Union Pacific Railway is subject to the laws of the state of Nebraska respecting the crossing and connecting of railroads, and the condemnation of property for those purposes: it is not the property of the Federal government set apart for its own use.

2. In the exercise of the power of eminent domain in condemning a right of way, a majority of the persons authorized to make the award have power to decide the same, provided they all act on the matter.

Jury Trials for Damages on Roads in Receivers' Hands.

The New York *Times* of Oct. 13 says: "During the past five or six years, when several New Jersey railroads were in the hands of receivers, many suits have been brought against the corporations for damages for injuries resulting in various ways, and as the roads were in the custody of the Court of Chancery, and the receivers were officers of the court, the Chancellor has uniformly exercised jurisdiction over them, instead of permitting the complainants to sue in the law courts of the state before a jury. Some time ago petitions were filed in the Court of Chancery by Aaron Doty and Catherine Doty for relief against the New Jersey Midland Railway Company, on the ground that by the careless use of locomotives on that road in 1875 valuable timber of the petitioners near Oakland, Bergen County, had been greatly damaged. The case was referred to Vice-Chancellor Van Fleet, whom the petitioners asked for leave to bring their suit in the Bergen County Circuit Court. The Vice-Chancellor was quite emphatic in his decision that the case ought to be disposed of in equity, and refused the application, sending it, instead, to Advisory Master Hopper, at Paterson, to hear and decide as to the facts. Yesterday the matter came up before the Advisory Master, when Mr. C. Ackerson, counsel for the petitioners, stated that since the proceedings before the Vice-Chancellor the Court of Errors and Appeals had unanimously reversed a like decision of the Vice-Chancellor and decided that all such suits for damages or torts ought to be tried in the law courts and by jury. Chief-Judge Beasley read the opinion, and after citing numerous precedents, declared that 'the dominance of this general principle is conspicuous.' Senator Taylor, for the defendants, cited a decision of the United States Circuit Court for Ohio, delivered in July last and subsequent to the decision of the New Jersey court, in which it is held that a court of equity having original jurisdiction in a case of this kind ought to hold it, and that the inalienable right of trial by jury would not apply in such cases. However, the Advisory Master thought that where the highest tribunal of New Jersey had considered that the 'dominance of the general principle is conspicuous,' he ought to conform to the ruling of that court, and he decided to permit the petitioners to bring their suit in the Bergen Circuit Court. This is the first instance of a reversal of the practice in the state for many years."

THE SCRAP HEAP.

Railroad Equipment Notes.

The Railway Speed Recorder Co. is running its works at Kent, O., to their full capacity, having orders on hand from the Chicago & Alton, the Kansas City, Lawrence & Southern, the Boston, Hoosac Tunnel & Western, the St. Paul, Minneapolis & Manitoba and several other roads. The Wythe speed recorder made by the company is now in use on over 60 roads.

The Brooks Locomotive Works, at Dunkirk, N. Y., have just delivered to the Cincinnati, Indianapolis, St. Louis & Chicago road a Mogul freight engine, with 18 by 24 in. cylinders.

Steam heating apparatus is to be put in a number of the passenger cars of the Central Railroad of New Jersey.

The Pittsburgh Locomotive works are building several passenger engines for the Pittsburgh & Lake Erie road. They are handsomely finished and have the Westinghouse automatic brake.

All the car shops in Wilmington, Del., are very busy, with orders for some time ahead.

The Wason Car & Foundry Co., at Chattanooga, Tenn.,

reports orders on hand sufficient to keep its shops busy for several months.

Iron and Manufacturing Notes.

Martel Furnace, at Point St. Ignace, Mich., is to be finished in time to go into blast before navigation opens next spring. It is owned by Davenport, Fairbank & Co., of Erie, Pa., and is located at the eastern terminus of the Detroit, Mackinac & Marquette road. It will be 58 ft. high, 10½ ft. bosh, will use charcoal for fuel, and will have all the latest improvements.

Coleman Furnace, at North Lebanon, Pa., is being put in order for an early start.

Etna and Monitor Furnaces, at Ironton, O., are being repaired and altered.

Gap Furnace, in Blair County, Pa., went into blast recently, and is doing well.

The Chester Steel Casting Co., at Chester, Pa., has begun another addition, 90 by 90 feet, to its works.

Gracie Furnace, at Port Leyden, Lewis County, N. Y., was put in blast Oct. 14. It is 50 ft. high and 10 ft. bosh, using charcoal for fuel. It is owned by the Gere Iron & Mining Co., which is also getting its Fanny Furnace, at the same place, ready to start up.

Fairbanks & Co. have just completed a track-scale 75 ft. long, of 75 tons capacity, at Sheridan station on the Pittsburgh, Cincinnati & St. Louis. This is the eighth track scale built by them for the Pennsylvania Company within a few months.

Dienelt, Eisenhart & Co., of Philadelphia, have just finished three of their dead-stroke power hammers for the Pennsylvania Railroad, and one for the Detroit Car Spring Co.

Prices of Rails.

Steel rails are quiet and prices are lower, owing to offers of foreign rails. Quotations are \$58 to \$60 per ton at mill, with perhaps higher prices for some small lots where early delivery is wanted.

Iron rails are active, with quotations at \$46 per ton at mill for 56-lbs. section, and \$47 to \$49 for light rails. A large business is reported in light rails, and some heavy orders are known to be on the market.

Old rails are dull and in light demand at \$25.50 to \$26 per ton. Sales have been small.

Blast Furnaces of the United States.

The *Iron Age* reports the condition of the blast furnaces of the United States on Oct. 1 as follows:

	In blast.	Out of blast.	Not reported.	Total.
Charcoal	153	116	4	273
Bituminous or coke	128	91	..	219
Anthracite	143	96	..	239
Total	424	303	4	731
Capacity per week, tons	70,029	52,580	..	132,209

A number of the furnaces out of blast, especially charcoal furnaces, are old and small and cannot be profitably worked; probably many of them will never be run again.

Train Wrecking for Revenge.

A dispatch from Bradford, Pa., Oct. 20, says that Moses Kane, a brakeman on the Philadelphia & Erie Railroad, was arrested the previous day near Corry and held for trial on the charge of deliberate murder in causing the death of George C. Silliman, civil engineer of the road, by purposely opening a switch by which a frightful collision was brought about.

There is a fast freight train on the Philadelphia & Erie Railroad known as the oyster train, because its cargo consists chiefly of oysters from Baltimore; Andrew Wood is its engineer. Silliman, the civil engineer, was on his way to Erie on important business. On Sunday he missed the passenger train at a station east of Corry, and got on the locomotive of the oyster train to continue his journey. The train ran very fast. At a point five miles east of Corry it was to pass an east-bound freight train which was run on a siding there to get out of the fast freight's way. When the oyster train was within a dozen car lengths of the switch the engineer discovered that it was open, and that his train, then running at the rate of 25 miles an hour, would run into the freight train on the siding. He called to his fireman and Mr. Silliman to jump. The fireman leaped out on one side and the engineer on the other. Silliman did not jump. When the fast freight struck the other train both locomotives were hurled high in the air and fell together into a mass of broken iron, fire and steam some distance from the track. The engineer of the train on the siding had seen the approach of the other in time to escape. The civil engineer was literally torn to pieces by the collision. Engineer Wood and his fireman were picked up near the track both badly hurt. A brakeman on the oyster train, named McCarthy, was found wedged between two cars, and is supposed to be fatally injured. Nine cars of the fast train were piled one on the other and are a total wreck. Five of the freight cars in the other train were demolished. The loss to the company will foot up between \$30,000 and \$30,000.

After the collision, Moses Kane, a brakeman on the eastbound freight, was missing. Engineer Keep, of the same train, at once declared that he believed Kane had caused the collision, hoping to kill him (Keep) thereby. Keep said that at one of the stations along the road Kane had got on board his engine. The engineer did not want him there, and told him to go back where he belonged. Some words followed, and Keep put Kane off the engine, Kane swearing that he would be even with Keep before the trip was over. It was his duty to open the switch to let the train go on the siding. It was shown at the coroner's inquest that Kane had been seen stealing toward the switch at the east end of the siding after the train had safely reached its position. That switch was proved to have been closed when the freight train took the siding. Kane was yesterday found in the woods not far from the place where the collision occurred, and was arrested. He was committed to jail on a charge of murder.

A New Zealand Accident.

The train which left Greytown for Wellington at 8:30 a. m. on Sept. 12, when just beyond Cross Creek was blown off the line and hurled over a precipice 70 feet high. The luggage van and passenger carriages were overturned; the couplings did not break, but still held the carriages frames to the engine, which remained tightly gripping the middle rail, and luckily held firm, although swaying visibly under the strain. The whole of the upper part of the carriage, however, was smashed into matchwood and hurled over the precipice, passengers and débris being scattered among boulders down the side of the declivity, but not falling to the bottom. For a while, however, the wreck of a carriage hung suspended above them; and had it given way or the engine fallen over, all must have been crushed to a jelly, as the gully at this place converges almost to a point nearly a hundred feet below, so that had all gone down they would have been crushed to a compact mass at the bottom. They lay around for a time unconscious, and those who first recovered their senses described the scene as a fearful one—killed and wounded lying around

in all directions covered with blood, and the train above suspended in mid air, threatening every moment to fall on them. A Fell brake was detached to run down the incline for assistance. The two produce wagons were also capsized by the gale, and the engine had to sustain a double strain of several vehicles hanging over the precipice at both ends, full weight on the couplings, which fortunately held fast. Two of the children killed on the spot were smothered in débris. Another was partially decapitated, and its brains dashed out. The third was picked up not quite dead, by Herbert Dickson, one of the passengers, himself much injured. He tried to carry her up the bank, but she died in his arms before reaching the top. When the special train arrived at the spot with doctors the force of the wind was so great that they had to crawl on their hands and knees, tightly clutching the middle rail, to avoid being blown over the precipice. All wounded were lying temporarily under the shelter of a cutting close by.—*New Zealand Times*.

His Head Carried Twenty Miles.

A horrible death by the cars occurred at Rush City last night. Peter Malnum, a Swede living about three miles north of this town, had been in town all day filling up with poor whisky, and jumped upon a freight train going north and rode to Pine City. He then took the first train south and got off at Rock Creek and started down the railroad track toward his home, when he laid down upon the track and through stupor fell asleep. The northern bound freight struck him, killing him instantly. On the arrival of the train at Hinckley, a distance of twenty miles from Rock Creek, the engineer while oiling up his engine discovered the man's head upon the pilot of the engine, mangled beyond recognition. The remains were picked up at Rock Creek in the morning, with both legs cut off, the body cut in two and the head off. The deceased leaves a wife and four small children in destitute circumstances.—*St. Paul (Minn.) Globe*.

Proposals for Mail Locks.

Sealed proposals will be received at the Post Office Department in Washington until noon of Jan. 26, 1881, for furnishing a new kind of mail locks and keys for registered mails. No pattern is prescribed, but bidders are left free to offer such devices as their own ingenuity may suggest, the only conditions being the general fitness of the locks for the purpose required, and that the lock accepted must be reserved for the sole and exclusive use of the United States. Specifications, contracts and forms of proposal will be furnished on application by letter to the Second Assistant Postmaster General, and no bid will be considered unless made in accordance with the prescribed form.

A Brave Brakeman.

A dispatch from Galena, Ill., Oct. 1, tells of a brave act of a brakeman. It says: "While the excursion train over the Galena & Wisconsin Railway was on its way to this city, yesterday forenoon, a young man named J. R. Harker, of Democrat, Wis., accidentally fell from the platform of the mail car, on which he was standing, just as the train was crossing the bridge over the Galena River at Mill Bridge. Harker rolled from the bridge into the river, and was rescued from drowning by Wm. Gleason, a brakeman, who jumped from the train and dove in after him. The unfortunate man died last evening, however, in great agony from internal and other injuries sustained by striking the bridge."

OLD AND NEW ROADS.

Atchison, Topeka & Santa Fe.—The Manhattan, Alma & Burlingame line is reported complete, and regular trains will soon be running over it. It leaves the main line at Burlingame, Kan., 76 miles from Atchison, and runs northwest by Alma and Wabaunsee to Manhattan on the Kansas Pacific, a distance of 59 miles.

Baltimore Cincinnati & Western.—This company has been organized at Wheeling, W. Va., to build a railroad from Cincinnati eastward to Ironton, O., thence across West Virginia, Virginia and Maryland to Baltimore, nearly 600 miles in all. The project is an old one, which dropped out of sight in 1873 and has just been revived. The capital stock is to be \$5,000,000, and the corporators are chiefly from Baltimore and Cincinnati.

Baltimore & Ohio.—The new stock-yards at Mount Clare station in Baltimore are nearly completed. They are very extensive and are provided with all the necessary conveniences for large business. They are owned by the Baltimore Stock-yard Company, and it is expected that after a time all the live-stock business of Baltimore will be concentrated there. For the present, however, the Northern Central will continue to use its old stock-yards.

Boston & New York Air Line.—It is said that C. E. Jackson & Co., of Middletown, Conn., have taken all the \$500,000 new bonds, which are to be issued in place of \$500,000 old 7 per cent. bonds, called for redemption on Feb. 1 next.

Boston, Revere Beach & Lynn.—At the annual meeting last week it was stated that during the year ending Sept. 30 this road had carried 1,112,296 passengers, against 977,511 the previous year. The total debt, less available assets, is \$318,592. Dividends of 6 per cent. were paid on the capital stock of \$350,000. During the year several important improvements have been made. There has been laid 6,000 feet of side track at a cost of \$5,000, which is so much of an advance toward the double track ultimately to be constructed. For the Pavilion Café, which is owned and run by the corporation, and pays a profit of itself, besides adding to the passenger business, \$6,000 has been expended. Payment of \$2,000 has been made for the perpetual right to use state flats for the purposes of Boston ferry slips. Other outlays have been for land for stations, etc., \$4,500; doubling the size of the Beachmont Hotel property, \$4,500; new station wharf and filling at East Boston ferry slip, \$14,500; new hard-wood bridge at Wood Island basin, \$10,000; solid filling of different bridges, \$8,500—making less \$3,000 charged to profit and loss, a total of \$52,000. This sum has been provided for by the issue of bonds, for which authority was given three years since. The road has been provided with steel rails throughout.

Brooklyn Elevated.—A meeting of stockholders and creditors was held in New York, Oct. 27. Mr. Wm. Strauss, the chairman of the committee appointed at the last meeting, reported that the bankers who hold the majority of the proxies of the bondholders have refused to co-operate with the committee. The report also stated that the whole capital stock of \$5,000,000 had been registered, that \$1,652,329 is in the Receiver's hands, and that he also holds \$1,590,800 in stock with which to redeem the outstanding scrip. The amount of bonds issued, according to the Farmers' Loan & Trust Company, is \$1,078,000. The Trust Company holds \$125,000, of which \$9,000 is at the orders of the Receiver as assets. It was resolved to continue the committee until Friday for conference with the bondholders. It is estimated that the road can be completed, with the exception of permanent station buildings, for \$2,321,051.34.

Butler & Detroit.—This company has been formed by the consolidation of the Northwestern Ohio and the Butler & Detroit companies of Ohio and Indiana. Its purpose is to

build the section of the Detroit, Butler & St. Louis road from Butler, Ind., through Indiana and Ohio to the Michigan line. The company will be consolidated with the Detroit, Butler & St. Louis Company, of Michigan, as soon as the road is completed.

Canadian Pacific.—A dispatch from Ottawa, Oct. 22, says: "The Cabinet was in session until one o'clock this morning, and it is understood that the Pacific Railway contract was virtually signed. It is said that although the document has been formally drawn up and the details of the contract finally agreed to, one or two signatures have yet to be attached, which it is expected will be done to-day. Mr. Greenfield, the accredited agent of the London firms interested, signed in their behalf. The details of the agreement cannot be obtained, but it is understood that security has been given for the completion of the road in ten years from Nipissing to the Pacific. The Cabinet are now discussing whether a special session of Parliament shall be held to ratify the contract. Some of the members of the syndicate have left for home."

Chicago & Block Coal.—Work is now in progress on the grading of the extension of this road from Attica, Ind., north to Oxford, about 15 miles.

Chicago, Clinton, Dubuque & Minnesota.—The following circular is issued from the office of this company, No. 26 Sears Building, Boston, under date of Oct. 18, and signed by Charles Merriam:

"Pursuant to vote of this corporation, passed on the 9th of October, 1880, the road and property of this company has been transferred to the Chicago, Milwaukee & St. Paul Railway Company. By the terms of the contract of transfer, stockholders who shall, on or before the 8th day of November next, cause the transfer of their shares to said Chicago, Milwaukee & St. Paul Railway Company, through the undersigned or otherwise, shall receive in full payment therefor 80 per cent. of the par value of his said shares in the 6 per cent. mortgage bonds of said railway company, secured by a mortgage upon the property thus sold and conveyed to said railway company; and further, that said railway company shall agree to deliver and shall deliver to each shareholder of this company who shall, after the 8th day of November next, or at any time transfer his shares to said railway company, 75 per cent. in cash, and not in bonds, of the par value of his said shares."

"The undersigned is prepared to receive and make such transfers upon the surrender of the stock certificates at this office."

Chicago, St. Paul, Minneapolis & Omaha.—The St. Paul Pioneer Press of Oct. 24 says: "This company has been making extensive improvements in Minneapolis this season, in the purchase and grading of its yard and erection of a freight depot there. The grounds embrace about 10 acres, from Third to Seventh avenue north, and lie upon either side of River street, the purchase price being \$80,000, and in grading the same and erecting a freight depot \$25,000 have been expended, under the direction of Assistant City Engineer Abbott. The depot, now completed save the roof, is of brick, and fire-proof, 45 x 330 ft. It extends from Fourth to Fifth avenues, and on the southwesterly side there is a roadway 40 ft. wide, giving teams free and ample access to the building from either Fourth or Fifth avenue, without crossing railroad track. Underneath the whole building is a cellar 10 ft. deep, blasted out of the solid ledge, making one of the best storage rooms in the city. The grading of the grounds is nearly completed, and side tracks are being laid. The plans contemplate five miles of track, 1½ miles of which will be laid this fall. Forty men are now engaged in finishing the work. Engineer Abbott informs us that trains will be running to the depot by Nov. 1."

Cincinnati, Wabash & Michigan.—This company is said to be making surveys for an extension from Anderson, Ind., south by east to Rushville, to connect with the Vernon, Greensburg & Rushville road. The distance is about 38 miles.

A considerable amount of money has been raised for the proposed extension of this road northward. The people in Michigan are ready to begin work, and negotiations are now in progress about the section from Elkhart, Ind., to the Michigan line.

Cleveland, Mt. Vernon & Delaware.—This company has for some years operated the Massillon & Cleveland road, from Massillon, O., to Clinton, 12.5 miles. The lease has always been unprofitable, and it is understood that the Receiver will, under directions of the court, abandon this branch and cease to run trains over it. It will, however, for the present, be worked by the Pennsylvania Company as a branch of the Pittsburgh, Ft. Wayne & Chicago. The road was originally leased by that company before its transfer to the Cleveland, Mt. Vernon & Delaware.

Dakota.—Surveys have been begun for this proposed road, which is to run from Bismarck, Dak., to the Black Hills.

Danville, Olney & Ohio River.—Track is now laid to West Liberty, Ill., 18 miles southward from the late terminus at the Embarras River and 51 miles from the northern terminus at Kansas. Grading is in progress on 13 miles more of the line, from West Liberty to Noble on the Ohio & Mississippi, and the survey of the northern extension, from Kansas to Danville, 40 miles, is soon to be begun.

Detroit, Butler & St. Louis.—All the grading on this road is now finished between Detroit Junction and Adrian, Mich., and between Adrian and Butler, Ind., only 20 miles are incomplete. The Rouge River bridge is complete and that over the River Raisin at Adrian, which is 800 ft. long, is nearly done. Track-laying is in progress both east and west from the Flint & Pere Marquette crossing, steel rails being used. It is expected that all the track will be down so well as September alone the entire loss of \$480,000 during the last two years will have been made up."

Detroit & Pelican Valley.—This new company proposes building a line from Detroit, Minn., on the Northern Pacific, southwest 48 miles to Fergus Falls, on the St. Paul, Minneapolis & Manitoba; thence west 30 miles to Breckenridge, and thence west by south to the James River Valley in Dakota. It is also proposed to build a branch 55 miles long from Fergus Falls due east to the Northern Pacific at Wadena. A contract for building the road has been let to an organization known as the Minnesota Construction Company, which is to receive its pay half in bonds and half in preferred stock.

East Tennessee, Virginia & Georgia.—Under the new arrangement by which the Selma, Rome & Dalton is placed under the same management as this road, the Dalton Branch is made part of that line. The Selma, Rome & Dalton trains all run through to Cleveland, Tenn., no longer stopping at Dalton, and the junction with the main line to Chattanooga and all transfers are made at Cleveland, Dalton becoming merely a way station.

Eastern Shore.—It is understood that the present owners of this road are trying to negotiate a sale of their property to the Philadelphia, Wilmington & Baltimore Company. The road has never been a valuable piece of property: it extends the Delaware Railroad from Delmar to Crisfield, Md.,

38 miles. It has been once sold under foreclosure of a second mortgage. It is chiefly owned in Philadelphia.

Evansville, Cincinnati, Dayton & Eastern.—This company has filed articles of association in Indiana to build a road from Evansville, Ind., to Dayton, O., with several branches. The capital stock is to be \$5,000,000.

Evansville & Terre Haute.—At the annual meeting last week the stockholders voted unanimously to approve the lease of the Rockville Division to the Terre Haute & Logansport Company for 99 years; also a lease granting the joint use of six miles of the same division to the Evansville, Terre Haute & Chicago Company. These are simply renewals of old leases, which were made necessary by the reorganization of the Logansport, Crawfordsville & Southwestern as the present Terre Haute & Logansport Company.

Galveston, Harrisburg & San Antonio.—President Crocker and other officers of the Southern Pacific are now in Texas, for the purpose of arranging for connections for their line east of El Paso. It is reported that they are negotiating for the extension of this road from San Antonio to El Paso.

Greenville & Columbia.—The proceedings relating to the foreclosure sale of this road terminated at Columbia, S. C., Oct. 24, when the syndicate which bid off the road at the sale paid the balance of the purchase money, complying with the terms fixed by the Court. The whole amount bid (\$2,393,600) having been paid, the deed was delivered and formal transfer of the property made.

International & Great Northern.—Tracklaying upon the extension to San Antonio is progressing steadily, and construction trains now run to York Creek, eight miles southwest of the late terminus at San Marcos, Tex. It is expected that trains will run to New Braunfels next month, and that the track will reach San Antonio before the close of the year.

Kentucky Central.—It is again reported that this company is preparing to extend its road from Lexington, Ky., southward with a view to reaching Knoxville, Tenn. It is further reported that the company is negotiating with the Louisville & Nashville for an agreement for the joint construction and use of the road from Livingston, Ky., to Knoxville.

Keokuk Northern Packet Line.—In the long pending suit of certain stockholders against this corporation, its officers and agents, to restrain the defendants from doing a general business in boat stores, buying grain, etc., and using the money, property and credit of the corporation for their own advantage and profit, and asking for the appointment of a receiver, Judge Lindley, of the Circuit Court, in St. Louis, Oct. 25, gave a decision in favor of the plaintiffs, and will appoint a receiver. The Court finds that W. F. Davidson, P. S. Davidson, W. M. Rhodes and Messrs. Hutchinson, Shethar and Conrad, constituting a majority of the board of directors of the company, abused their trust and used property of the corporation for their individual gain, and renders judgment that they must restore some \$35,000 of their personal profits, removes them from their positions as directors and officers of the company, and orders a new election to fill their places. The Keokuk Northern Line is the largest transportation company on the Upper Mississippi and owns an extensive fleet of valuable steamers and barges.

Knox & Lincoln.—The people of Bath, Me., have voted to authorize the City Council to settle the bonds issued in aid of this road provided it can be done on terms which will be for the interest of the city to accept, and for that purpose they are authorized to issue new bonds in such forms and amounts as may be desirable, bearing interest at the rate of 4 per cent. per annum, payable semi-annually, to run not less than 20 years and not over 40 years from date, and to an amount not exceeding \$871,850.

Knoxville & Cincinnati Southern.—The line of this proposed road is now located from Knoxville, Tenn., to the Cincinnati Southern at Emory Bridge. The distance is 42 miles; the elevation above the sea at Knoxville is 886 ft. and at Emory Bridge 784 ft., the highest intermediate point being 1,112 ft. at Black Oak Ridge, six miles from Knoxville. The engineers' estimate of the cost is under \$25,000 per mile, and efforts are to be made to raise the money at once.

Lebanon Springs.—The Receiver having taken possession of this road, or so much of it as extends from Chatam, N. Y., to the Vermont line, all trains have been withdrawn, and the road will be abandoned for the present. An effort is to be made to run a train on the Vermont end of the road, from Bennington to the state line.

Lehigh Coal & Navigation.—A statement published in Philadelphia says: "The past month was the best ever known in the history of the Lehigh Coal & Navigation Company. There may have been one or two months just after the great strike in 1875 when the gross income was greater, but none in which the net surplus over all charges was larger. The gross revenue from all sources was \$254,333, and the expenses for operating and fixed charges of every kind were only \$106,732, leaving net earnings of \$147,600. Of this amount the railroad of the company earned \$147,000. Up to the last of August the company was short \$3,906 on its fixed charges, but the gain of last month leaves it a net surplus for the year of \$143,754, which is a gain of fully \$275,000 over the first nine months of last year. It is expected that October will prove quite as satisfactory to the stockholders, and if the remaining three months do twice as well as September alone the entire loss of \$480,000 during the last two years will have been made up."

Louisville, New Albany & Chicago.—Notice is given that the new first-mortgage bonds of this company will be issued and delivered on and after Nov. 1 at the National Bank of Commerce in New York to stockholders entitled to receive them, upon presentation of the receipts, duly indorsed, which they now hold.

Manitoba Southwestern.—This company has let contracts for grading 50 miles of its road from Winnipeg, Manitoba, westward to Rock Lake, and also for the bridge over the Assiniboine River. The whole length of the road as projected is 285 miles, but the line is not yet fully located beyond Rock Lake. The company has a land grant from the Canadian government, and is said to have placed a large amount of its bonds in London.

Michigan Central.—The contract for grading, bridging and providing ties for the extension of the Jackson, Lansing & Saginaw Division from Gaylord, Mich., to Cheboygan, 48 miles, has been let to Hendrick & McDonald, who also have a contract on the eastern end of the Detroit, Mackinac & Marquette. Work is to be begun at once.

Midland of New Jersey.—This company has bought from the New York, Ontario & Western the right of way into Middletown, N. Y., from the Erie crossing to Main street, including main track, sidings, coal dump, depot buildings and land. The consideration is understood to be the Midland's interest in some property near Jersey City. Here-

tofore the Midland has leased the use of the tracks and depot in Middletown.

New York, Connecticut & Eastern.—The Hartford Courant says: "The Railroad Commissioners met in New Haven on Friday for the purpose of a further hearing in relation to the New York, Connecticut & Eastern Railroad Company, but no hearing was had, the directors having decided that none was necessary, as in case the layout was accepted they would be unable to expend the \$50,000 in actual construction before Oct. 30, as required by the general railroad law of the state, under which they have their charter. Consequently the present company will go out of existence, to make way for a new one, soon to be organized, and the managers of the present company claim that the new organization will complete the work which has been begun. The Commissioners took no official action in the matter."

New York, Lackawanna & Western.—The line of this proposed road from Binghamton, N. Y., to Buffalo is described as follows in the official documents filed in the counties through which it is to pass: The line runs parallel with the New York, Lake Erie & Western track from Binghamton to the east line of Steuben County; thence continuing on in the county last mentioned in a northwesterly direction up the Cohocton River through the town of Corning to the village of Painted Post; thence up the valley of the Cohocton River on the south side of the New York, Lake Erie & Western Railroad, through the towns of Erwin, Campbell and Bath to the village of Bath; thence continuing on in the same course in said county through the towns of Avoca, Cohocton and Wayland to a point on the line of Livingston County; thence in a westerly direction through the north-easterly corner of the town of Dansville in the county last mentioned to a point in said town three-fourths of a mile east of the village of Dansville; thence in a westerly direction through the towns of Sparta and Groveland in the county last mentioned to Shakers' Crossing on the Dansville & Mt. Morris Branch of the New York, Lake Erie & Western; thence crossing the track of said railroad and the Genesee River and continuing on in a north by westerly course through the towns of Leicester and York in the county last mentioned to a point in the county line between Livingston and Genesee counties, about five miles east of Pavilion; thence in a westerly direction through the town of Pavilion, crossing the Rochester & State Line Railroad at Pavilion Center and continuing in the same course through the towns of Bethany and Alexander, crossing the Attica branches of the New York, Lake Erie & Western Railroad about two miles north of the village of Alexander, thence on the same course through the towns of Alexander and Darien in said county to the county line of Erie County; thence through the towns of Alden, Lancaster, Cheektowaga, Amherst and Tonawanda in the county last mentioned, crossing the Tonawanda Branch of the New York, Lake Erie & Western near the line of the city of Buffalo, thence continuing on in said town of Tonawanda crossing the Niagara Falls Branch of the New York Central near the line of the city of Buffalo; thence due south about 1½ miles to the tracks of the International Bridge.

This route is almost alongside of the Erie or one of its branches for its whole length, with probably no station more than three or four miles from an Erie station.

Philadelphia & Reading.—The Receivers' statement for September and the ten months of the fiscal year from Dec. 1 to Sept. 30 is as follows:

	September	Ten months
Gross earnings	1880. 1879.	1880. 1879.
Railroad traffic	\$1,877,073 \$1,197,162	\$13,372,871 \$10,388,665
Canal traffic	151,583 105,522	596,495 665,909
Steam colliers	50,259 54,711	483,921 537,467
Richm'd barges	10,341 16,618	82,672 124,099
Total	\$2,089,256	\$1,374,013
Coal & Iron Co.	1,330,390	978,745
Total	\$3,425,646	\$2,352,758
	\$23,052,486	\$10,818,392
Traffic:		
Passengers carried	1,001,251	893,314
Tons merchandise	478,093	523,049
Tons coal	904,828	810,314
Tons coal on colliers	45,836	56,715
Tons coal mined:		
By Coal & Iron Co.	439,616	419,241
By tenants	163,565	128,719
Total	603,181	547,960
	3,668,633	4,468,172

The passenger and coal traffic for the month shows a gain, but general tonnage has decreased. The large gain in the earnings of both companies appears to have come quite as much from better prices for coal as from increase in tonnage.

The statement of expenses is continued, and is as follows:

	September	Ten months
Railroad Co.	1880. 1879.	1880. 1879.
Gross receipts	\$2,089,256	\$1,374,013
Gross expenses	1,150,086	1,000,695
Net profit	\$933,170	\$373,318
Coal & Iron Co.		
Gross receipts	\$1,330,290	\$978,745
Gross expenses	1,117,427	1,068,001
Net profit	\$218,963	\$97,744
Co.	\$1,152,133	\$254,062
	\$4,084,824	\$2,138,394

* Loss.

For September the Railroad Company gained 52.1 per cent. in gross and 150.0 per cent. in net earnings; the Coal & Iron Company gained 35.9 per cent. in gross earnings, and the net earnings of both companies increased 353.4 per cent. The Railroad Company for the 10 months gained 24.1 per cent. in gross, and 27.9 per cent. in net earnings; the Coal & Iron Company gained 125 per cent. in gross earnings, while the net gain of both was 91.0 per cent. The gross expenses include rentals paid.

The Receivers offer to pay the interest on some additional land mortgages of the Coal & Iron Company at reduced rates. Also to pay the November coupons on the Schuylkill Navigation Company boat and car and improvement loans, provided the holders will accept 5 per cent. interest instead of 7.

Mr. Thomas Wilde Powell is reported as saying in answer to a question as to the effect of Mr. Gowen refusing to consent to a committee for reorganizing the road:

"Then foreclosure is the only effect that I can see. Mr. Gowen would undoubtedly try to prevent this, as it would finally dispose of the road. The scheme proposed to pay half of the July coupons in cash, and then stamp them half paid, has not been accepted by the London holders. I am awaiting their answer. To accede to this proposition would very much interfere with proceedings in foreclosure, and under those circumstances it is not probable that the scheme will be accepted."

Relative to the Harris report on the value of the coal lands, he partially admitted that they cost twice as much as their value is now estimated, and said it was an expenditure

of \$70,000,000 to protect \$40,000,000. The capital stock, he thought, had been rather worsened in the encounter.

Northern Pacific.—Regular trains have been put on the Missouri Division and now run to the new terminus at the Little Missouri. The stations, with distances from Mandan, the starting point on the west side of the Missouri opposite Bismarck, are: Marmot, 8½ miles; Sweetbriar, 16; Spur, 24½; Blue Grass, 28½; Bly's Mine, 35; Curlew, 45½; Kurtz, 52½; Eagle's Nest, 63½; Knife River, 71½; Young Man's Butte, 79½; Antelope, 90½; Green River, 98½; Pleasant Valley, 109½; South Heart, 120½; Houston, 130; Fogarty 136; Sully's Springs, 142; Little Missouri Station, 152 miles.

Pennsylvania.—This company's statement for September shows for all lines east of Pittsburgh and Erie, as compared with September of last year:

An increase in gross earnings of (9.3 per cent.)	\$311,615
An increase in expenses of (24.4 per cent.)	426,744

Net decrease (7.3 per cent.) \$15,729

For the nine months ending Sept. 30, as compared with the corresponding period in 1879, the same lines show:

An increase in gross earnings of (23.4 per cent.)	\$5,738,404
An increase in expenses of (20.3 per cent.)	3,005,207

Net increase (28.2 per cent.) \$2,733,197

The month's expenses include large payments for renewals and improvements of property.

All lines west of Pittsburgh and Erie for the nine months of this year show a surplus over all liabilities of \$2,086,231, being a gain of \$1,977,397 over the corresponding period in 1879.

The company has given notice that it is ready to adjust all reasonable and legitimate claims for damages arising from the recent collision of passenger trains at Pittsburgh.

The Philadelphia North American says: "During the current year track room for 575 cars has been added at Greenwich, and 280 cars at the old Navy-yard, a total of 855 cars, increasing the track capacity to 4,170 cars. The linear feet of berth room for vessels has been increased by 1,200 feet at Greenwich and 1,920 feet at the old Navy-yard, a total of 3,120 feet, bringing the aggregate up to 21,175 feet. The track capacity on the piers has been increased 130 cars at Greenwich and 70 cars at the old Navy-yard, a total of 200 cars, bringing the aggregate capacity up to 894 cars."

"The Pennsylvanian's capacity for handling freight in this city last year was 1,900 cars, and the daily average 1,192; there has been an increase this year to 2,155 cars daily maximum capacity, and 1,380 cars the daily average handled. This is an increase of 165 cars maximum capacity, and of 168 cars handled daily. There has, besides, been an increase of about 100 cars daily capacity in handling grain by introducing a series of portable chutes connected with the coal piers at Greenwich, and this, aided by the electric light at night, can be increased in capacity about 70 cars more. The introduction of the electric light will also increase the handling capacity of coal over the Greenwich piers by 100 to 120 cars per day."

Pittsburgh Local.—This company and another, known as the Pittsburgh & Allegheny River, have petitioned the Pittsburgh City Council for authority to build their proposed lines in the city, to cross certain streets at grade and to use portions of other streets. The object of both companies is the same, to build freight tracks to connect a large number of mills and factories in Pittsburgh with the existing railroads.

Providence & Worcester.—Grading has been begun for a second track on this road between Farmingtonville, Mass., and Whitinsville, seven miles. In connection with this work a new location is to be made at Northbridge, to avoid the curves now in the track at that point.

Savannah, Florida & Western.—Work is progressing rapidly on this company's new Florida line. The grading is about finished on the 34 miles from the main line at Waycross, Ga., to the St. Mary's River, and it is well advanced on the 37 miles thence to Jacksonville, Fla. The intention is to have the line open in January, and the company has already ordered two heavy passenger engines and an equipment of new cars for the fast trains which it expects to run between Savannah and Jacksonville during the season of Florida travel.

St. Louis & San Francisco.—This company's Arkansas Branch is now completed from the junction with the main line near Peirce City, Mo., southward to Washburn in Barry County, about 25 miles. Work is progressing steadily on the 45 miles from Washburn to Fayetteville, Ark.

The company is making large additions to its shops in Springfield, Mo., to meet the necessities of its increased length of road.

St. Paul, Minneapolis & Manitoba.—The United States Circuit Court has refused to grant an injunction to prevent this company from building a bridge over Red River on its Barnesville & Moorhead Branch. The Court held that it had no authority to prevent the construction of the bridge merely upon the representation of the Northern Pacific that it would cut off trade upon the river from the Northern Pacific. If the bridge is built without legislative authority, or in defiance of legislative charters, that is a matter for the state courts. If it shall hereafter be proved to be a nuisance or an obstruction to navigation, the Federal court will interfere, but not otherwise. Accordingly the construction of the bridge will proceed.

Securities on the New York Stock Exchange.—The following securities have been placed on the lists at the New York Stock Exchange:

Gulvelton, Harrisburg & San Antonio, general second-mortgage bonds, \$1,000,000; La Grange Tap first-mortgage bonds, \$300,000.

Missouri Pacific, new consolidated stock, \$12,419,000.

New York, Lake Erie & Western, old fourth-mortgage bonds extended, \$2,937,000.

Ohio Central, first-mortgage terminal trust bonds, \$600,000; these bonds are secured on docks and other terminal property in Toledo and Columbus.

Tehuantepec.—The annual meeting of this company was held last week in Pittsfield, Mass., when it was stated that the entire line of 150 miles across the Isthmus of Tehuantepec from the Pacific Ocean to the Gulf of Mexico had been located. The road was graded for 30 miles from the mouth of the Coatzacoalcos River, and 10 miles of track had been laid.

Toronto, Grey & Bruce.—Toronto dispatches state that an agreement has finally been concluded for a lease of this road to the Grand Trunk for a fixed percentage of the gross receipts. It is estimated that the rental will probably be sufficient to pay 3 per cent. yearly on the bonds. The negotiations with the Grand Trunk have been in progress for some time.

Toledo, Delphos & Burlington.—This company has made arrangements to use about a mile and a half of the Cincinnati, Wabash & Michigan track through the town of Marion, Ind., laying a third rail to suit the gauge of its road.

LOCOMOTIVE RETURNS, JUNE, 1880.

Master Mechanics of all American railroads are invited to send us their monthly returns for this table.

NAME OF ROAD.	NUMBER OF MILES OPER.	NUMBER OF LOCOMOTIVES IN SERVICE.	MILEAGE.	MILES RUN TO DATE.	AVERAGE NO. OF FREIGHT CARS HANDLED.	COST PER MILE IN CENTS FOR FREIGHT CARS.	COST PER MILE IN CENTS FOR PASSENGER CARS.				AVERAGE COST OF WOOD, PER CORD.
							FUEL.	STORES.	MACHINERY.	ENG. & FIREMEN.	
Allegheny Valley, River Division*	139	35	77,600	2,217	47,81	24.00	18.80	7.35	2.78	0.46	8.37
Low Grade Div.*	15	98,641	1,501	31,57	19.06	22.93	4.88	3.30	0.66	0.82	16.96
Central Pacific, Western Div.*	900	30	75,057	2,508	47,02	79,60	4.59	15.85	0.49	0.40	7.15
Northern & San Pablo Div.*	104	28	66,703	2,382	41,18	18,50	5.22	18.09	0.48	0.40	7.92
Visalia Div.*	17	12	26,106	2,176	39,64	19,14	4.57	18.86	0.45	0.11	6.50
Tulare Div.*	170	12	28,156	3,316	32,88	15,01	4.20	22.71	0.57	0.24	8.52
Los Angeles, San Diego, Yuma & Wilcox Div.*	700	41	128,641	8,137	48,94	17,44	6.13	15.27	0.50	0.29	9.90
California Pacific Div.*	10	28,584	2,838	56,19	29,43	3.80	13.19	0.36	0.71	6.45	24.51
Stockton & Copperopolis	49	4	7,596	1,866	39,35	83,04	4.09	14.64	0.31	0.25	5.16
Sacramento Div.*	119	43	95,393	2,385	28,04	20,76	5.03	15.12	0.43	0.17	9.08
Oregon Div.*	151	8	22,259	2,759	28,37	2,70	4.80	8.05	0.34	0.11	7.0
Truckee Div.*	205	26	62,382	2,303	32,42	30,79	8.91	19.97	0.42	0.46	8.42
Bald Lake Div.*	210	17	51,391	3,019	41,36	13,07	6.56	16.0	0.40	0.20	7.93
Illinoian Main Line	219	28	75,000	2,093	35,31	18,68	3.94	22.22	0.48	0.23	7.29
Chester, Haute Div.*	220	40	92,000	3,000	38,75	18,00	4.84	19.46	0.40	0.26	7.45
Cin., Lafayette & Chicago	75	10	37,620	3,762	35,64	14,76	1.72	6.45	0.29	0.45	5.89
Cleve., Col., Cin. & Ind.	472	10	48,430	4,217	26,75	2,96	5.08	0.53	0.54	0.15	13
Cleveland & Pittsburgh	225	84	105,917	1,975	50,81	21,27	4.10	30.01	0.36	3.20	6.59
Cleveland, Tus. Valley & Wheeling	150	17	52,672	3,098	39,06	18,32	4.95	2.28	0.49	0.59	13.81
Dela., Lacka. & Western Bloomsburg Div.*	80	26	64,481	2,510	27,96	2,68	4.11	17.00	0.52	0.41	7.61
Erie, Pittsburg & Lake Erie	86	26	55,110	1,968	46,47	3,15	4.15	0.51	1.7	6.54	18.09
Grand Rapids & Indiana	322	121,294	3,038	45,12	32,11	3.72	6.09	0.41	1.51	5.8	18.46
Green Bay & Minnesota	210	36,870	2,458	51,20	40,60	28,27	2.70	5.83	0.34	0.23	3.49
Houston & Texas Central	554	63	171,660	2,725	43,20	36,50	5.89	6.84	0.44	0.81	2.17
Illinois Central, Chicago Div.*	365	23	206,034	2,66	37,05	17,43	4.16	4.05	0.27	0.48	14.17
Middle Div.	86	6	15,905	1,767	50,01	19,37	1.49	2.7	0.25	0.49	1.47
North Div.	345	10	117,031	2,149	38,01	10,10	4.92	4.34	0.29	0.57	14.53
Ohio & Michigan Div.*	113	20	41,278	2,149	38,01	2,29	3.61	0.17	0.31	0.91	19.05
Iowa Div.	46	10	10,777	3,660	33,59	18,07	3.44	2.27	0.28	0.58	16.81
Jeffersonville, Madison & Ind.	229	43	6,935	2,227	49,42	13,05	4.97	2.27	0.28	0.57	16.28
Kan. City, St. Jo. & Council Bluffs**	217	39	101,502	2,673	57,73	21,30	4.30	5.10	0.31	0.30	16.51
Lake Shore & Michigan South Div.	84	180,642	2,150	39,32	60,0	24,55	3.23	6.88	0.29	0.37	16.75
Buffalo Div.*	117	207	2,201	30,81	3,00	3,00	3.98	6.59	0.26	0.51	22.27
Erie Div.*	86	190,527	2,149	28,78	3,00	2,20	3.61	6.17	0.31	0.51	14.08
Illinoian Main Line	207	21	45,000	2,114	50,73	1,00	4.00	1.44	0.24	0.44	3.10
Little Rock Miss. River & Texas	116	53	12,000	61,000	11,00	4,62	9.11	0.51	1.08	6.30	16.33
Louisville & Nashville, First Div.**	470	62	127,432	2,055	32,87	13,55	3.92	6.46	0.28	0.86	16.85
Second Div.**	200	33	23,000	2,253	33,13	2,37	5.24	1.63	1.70	1.91	2.54
Memphis Div.**	131	10	39,678	2,480	48,04	16,43	4.70	5.30	0.30	1.81	2.15
Nash. & Decatur Div.**	122	2	46,357	2,518	32,92	14,82	6.08	5.57	0.23	1.04	1.77
South & North Alabama**	180	34	89,334	2,627	38,31	20,53	5.24	5.00	0.28	0.51	16.83
Evansville, Hen. & Nash. Div.**	135	28	67,340	2,916	34,50	18,11	3.31	3.02	0.23	0.88	2.40
Montgomery & Montgomery**	180	24	47,300	2,630	30,24	1,49	4.96	12,92	0.03	0.40	2.49
M. & St. Louis Div.**	24	50,859	4,048	45,05	13,03	1,980	4.41	4.28	0.16	0.97	1.98
New Orleans Div.**	141	23	7,041	2,215	22,35	12,33	5.21	4,20	0.52	1.33	6.04
Marquette, Houghton & Ontonagon	88	30	46,437	1,548	41,57	22,45	4.42	1.20	0.40	0.58	18.83
Missouri, Kansas & Texas**	796	80	285,571	3,522	11,67	17,82	4.00	4.46	4.54	0.32	0.62
N. Y., Penn.											